

MINING *People*

Mineral Processing

Rare Earth Elements: Critically Important and Increasing in Demand



Rick Honaker

Professor in the University of Kentucky's mining engineering department and principal investigator



Paul Ziemkiewicz

Director of West Virginia University's Water Research Institute



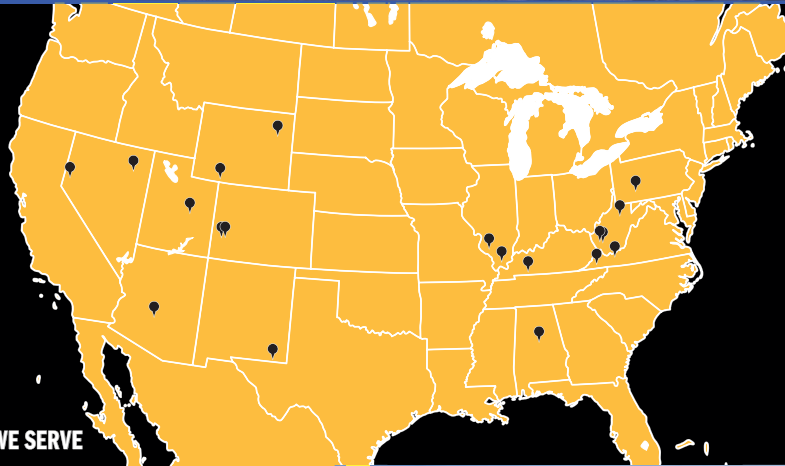


UNITED CENTRAL
INDUSTRIAL SUPPLY®
a SunSource Company



Lubrication
Equipment
& Supply

WE ARE WHERE YOU NEED US TO BE.



The Right Products.

At United Central, we are your one source for mining supplies. We stock the largest selection of products, including cable, electrical, safety, hydraulics, material handling and MRO supplies. Every product we carry is geared toward the mining industry.

The Right Place.

The best place we can be is near you – our customer. United Central has multiple branches strategically located throughout North America. When you need supplies, we know you need them quickly. Our team is ready to deliver.

The Right Support.

Our sales and product management teams are unmatched. Our product management team has completed extensive factory-authorized training with our major manufacturing partners. When you have questions, we have answers.

INDUSTRIES WE SERVE

METAL & NON-METAL MINING



HARD ROCK MINING



UNDERGROUND COAL



SURFACE COAL



www.unitedcentral.net

United Central Industrial Supply is truly a one-stop resource. We save you time. We save you money. And best of all, we save you the headache of searching for what you need. Contact us today at UnitedCentral.net.



**Eliminate the risk of using gray market and counterfeit product by calling United-Central for authentic Eaton breakers.

MINING People

Published by AI Skinner, Inc.

Editor/Publisher

AI Skinner E-mail: alskinner@ntelos.net

Managing Editor

Christina Martin E-mail: cpm@ntelos.net

Staff Writer/Field Reporter

Debra McCown Thomas

Production Department

E-mail Artwork or Inquiries to: cpm@ntelos.net

Advertising Sales

Lisa Roper

Phone (864) 278-8227 E-mail: lisa.ropер@charter.net

Chuck Roper

Phone (864) 546-8978 E-mail: chuck.ropер@charter.net

Website Administrator **Chuck Jelderks**

Circulation Changes E-mail to cpm@ntelos.net

Corporate Office

NEW NUMBER! Phone (304) 539-2792

P.O. Box 6247, Charleston, WV 25362

629 Virginia St., W, Charleston, WV 25302

Web Portal www.miningpeople.org

Subscribe on-line when visiting Website.

Subscription rate \$25 annually within the

United States. \$50 for Canadian and overseas subscriptions.

Send payment to above address.

Mining People Magazine is mailed direct to mining and aggregates executives with buying power in the United States, Canada, Mexico and overseas. Each copy is mailed specifically to company presidents, CEO's, vice presidents, engineers, purchasing agents, and mine supervisors. Additional copies are distributed at shows, conferences and meetings. Editorial material should be submitted to the editor at the address above by the 15th of the month prior to publication. All original material including advertising design, copy illustrations and signatures conceived and developed by AI Skinner Inc for use by its publication are for express use of this publication. All rights reserved. © Advertising rates and editorial calendars are available upon request by calling Lisa Roper at (864) 278-8227.

Mining People Magazine has You Covered

The Most Unique Blend of Editorial and News in the Industry...

Comparable to No Other! In-Print and On-Line

MINExpo SHOW ISSUES: These issues will include an Exhibitor's Index Section highlighting company profiles, booth number and contact information for MPM advertisers exhibiting. **BONUS** Distribution at MINExpo, in addition to regular mailed and digital circulation.

1/2-Price Advertising Available for Show Insert!

August

MINEXPO PRE-SHOW ISSUE

September

MINEXPO SHOW ISSUE

Contact a sales representative!

Lisa Roper 864/278-8227 lisa.ropер@charter.net



PAULS FAN COMPANY



Proudly Announcing

PAUL'S AUTOMATION AND CONTROLS

Dedicated to offering the same reliability and customization that you get from Paul's Fan Co.



- Engineering and Consulting
- VFD, PLC, Starters & More
- Preventative Maintenance
- Custom Electrical Controls
- Extensions, Upgrades & Retrofits
- Replacement Parts
- Complete Components
- For all Low & Medium Voltage Electrical Needs

PAUL'S AUTOMATION & CONTROLS

276-530-7311

PAULSFANS.COM

JIM HARMON - DIR OF ENGINEERING

304-890-7666

PAULS FAN COMPANY



Features

Dedicated to Mining and Aggregates Worldwide

12



The Rush for Rare Earth Elements
by Debra McCown Thomas

16



Women Who Rock: An Organization to Help Women Pursue Careers in the Mining Industry
by Debra McCown Thomas

10



CoalProTec Show Rescheduled for November

On the cover...
 Background: The pilot plant facility that the University of Kentucky researchers are using to recover the rare earth elements from coal refuse with the help of DOE funding.
 Insets: Top: Rick Honaker (right), professor in the University of Kentucky's mining engineering department and principal investigator. Bottom: Paul Ziemkiewicz (right), director of West Virginia University's Water Research Institute



Departments

Buyer-Friendly Ad Index "Find it Fast" 4
 Editorial..... 6
 Mining People Comments 8
 Capsule News 18
 Worldwide News..... 22
 Mining People in the News 26
 Energy News 25
 Product News 28
 Advertising Index 34
 Professional Directory / Classified..... 31-34

Buyer-Friendly Index

ABRASION / IMPACT RESISTANT MATERIALS

HardSteel, Inc. (31) www.hardsteel.com

ACTUATORS

RACO International (15) www.racointernational.com

AUTOMATION AND CONTROL

Pauls Fans (3) www.paulsfans.com

BELT CLEANING SYSTEMS

Richwood (7, 31) www.richwood.com

CERAMIC PROCESS EQUIPMENT

Ceramic Technology (33) www.ceramictech.com

**CERTIFIED FUSION TRAINING /
 EQUIPMENT CERTIFICATION**

Lee Supply Co., Inc. (8-9) www.leesupply.com

COAL PREPARATION

Farnham & Pfile Engineering & Construction (31) www.farnham-pfile.com

CONTRACTORS

Cowin & Company Inc. (31) www.cowin-co.com

CONVEYOR ACCESSORIES

Richwood (31) www.richwood.com

CONVEYORS

West River Conveyor (31) www.westriverconveyors.com

DISTRIBUTORS / ENGINEERED PRODUCTS

RM Wilson Co, Inc. (36-BC) www.rmwilson.com

United Central Industrial Supply Co., Inc.(2) www.unitedcentral.net

EVENTS

MINExpo Intl. (35) www.minexpo.com

FANS / FAN REPAIR

Pauls Fans (32) www.paulsfans.com

IMPACT SADDLES

Richwood (32) www.richwood.com

LOAD ZONES

Richwood (7) www.richwood.com

MINING PRODUCTS & EQUIPMENT

Coalfield Services (33) www.coalfieldservices.com

Jenmar Corp. (11) www.jenmarcorp.com

PIPING & PUMPING SYSTEMS / HOSE

Lee Supply Co., Inc. (32) www.leesupply.com

PIPING, VALVES & FITTINGS / HOSE

JABO Supply (34) www.jabosupply.com

RAISE BORING

Raisebor (32) www.raisebor.com

ROCK CONSOLIDATION & VOID FILL

Strata Worldwide (33) www.strataworldwide.com

SAMPLING SYSTEMS

Precision Samplers (32) www.precision.samplers.com

TIRES

Setco Tire & Rim Assembly (5, 33) www.setcosolidtire.com

TOUGHER THAN STEEL PROVEN

Solving Your Toughest Tire Problems

SETCO Offers Complete Tire Assembly to
HAUL THE HEAVIEST LOADS



SETCO's newest design, the **S-Mine** tire, has improved shape and tread design which will provide the best traction as well as longevity and productivity. Air holes are molded into the sidewalls for a much softer ride.

SETCO CAN EASILY

- Change the entire dimension on a tire
- Vary the rubber depth for maximum load and carry
- Utilize its custom heat dissipating compound to minimize heat throughout the assembly to maximize load capacities while minimizing fatigue on the machines and operators.

THE RUBBER IS UNDER NO PRESSURE

- No cord body pumped up to 200 psi that will explode with the slightest cut or puncture.
- No internal pressure attempting to escape at the first sign of weakness.



Phone (580) 286-6531
Toll Free (800) 634-2381



Authorized Distributor:
R.M. Wilson Co., Inc.
Wheeling, WV (800) 624-5460
Beckley, WV (800) 232-5539
Price, UT (435) 637-6950

www.setcosolidtire.com

Coal Has a Future in Technology



by Debra McCown Thomas
Staff Writer / Field Reporter

Globally coal use is still rising in response to rising world demand.

If you listen to a certain political narrative that's rolling around on the airwaves and the Internet these days, you'd think that coal has gone the way of the dinosaur. That it's dead, extinct, and gone.

Of course, that narrative disregards the fact that US mines produced an estimated 684 million tons of coal last year – and that scores of coal-fired power plants are currently putting electricity onto the US grid.

Yes, those numbers represent a significant decrease compared to a decade ago; in 2009, total coal production in the US was more than 1 billion tons, and the projected 2019 number is the lowest it's been since 1978 – more than 40 years ago.

This trend is not a surprise. It's occurred at the convergence of several factors: aging power plants, a natural gas boom that's brought low prices and previously unheard-of stability to coal's top competing fuel, anti-coal policies, and a much-repeated environmental narrative that paints coal with a negative brush.

Globally, however, coal use is still rising in response to rising world demand. According to the International Energy Agency, the latest global coal production numbers show a significant high in recent years; globally, coal production today is nearly double what it was 20 years ago.

Some anticipate that, as developing countries continue to grow and industrialize, the need for infrastructure and affordable energy – traditional uses of coal – will continue to drive demand. But there's also another factor that's come on the scene: a whole new set of technologies that will help to drive demand for coal in the future.

In short, the shrinking US market for thermal coal is not the end of the story – not even close.

Around the world, coal remains an important fuel for electricity generation. The need to build more infrastructure globally means the world also needs a lot of steel – and therefore a lot of coal. Some of the world's best metallurgical coal is mined in the United States. But that's not the end of the story either.

In addition to electricity and steel production, there's also a

whole new category of uses for coal that's only just starting to be explored.

I've written a few stories in *Mining People* about alternative uses for coal over the years – from a major chemical plant in Tennessee that has long used coal as a feed stock, to the potential for extracting rare earth elements from coal as a byproduct of processing, to the possibility of using coal as a raw material to produce carbon fibers.

Rare earth elements are a big ingredient in the components of equipment for generating and storing renewable energy, and lightweight carbon fibers are a great material for improving energy efficiency in transportation. Ironically, in order to build more renewable energy capacity and reduce energy use in transportation, the US may have to mine more coal.

And the 21st-century technologies that are starting to use coal now are likely just the tip of the iceberg; there are more concepts and technologies emerging that may prove significant in the future. In both the eastern and western coal-producing regions of the United States, there is work underway on current and future technologies using carbon.

For example, there's a company in Wyoming that's working on carbon products and advanced materials for use in areas like drones, medical equipment and transportation. Among the things they hope to manufacture there: carbon fiber, graphene, graphite, carbon nano tubes, carbon dots, carbon-based resins, carbon-based building products, medical products, and activated carbon.

In Virginia, meanwhile, the use of carbon-based materials to produce electronic components – in place of silicon – is being studied along with the potential for the same carbon allotrope, graphene, to be used in next-generation building materials.

Both of these projects have involved infusions of government money, and in both regions – the Powder River Basin and Central Appalachia – they're throwing around the phrase "carbon valley" to describe the way they hope their efforts will revolutionize society. They compare their potential to California's "silicon valley," an area between San Jose and Palo Alto that became known as an innovation hub and economic

driver because of pioneering work done there in computing and electronics.

And while these projects are strategically located in coal-producing regions, the interest in the potential quality of life improvements that could be made possible by carbon-based materials is much broader than simply those who are interested in coal.

Take, for example, an idea that was showcased in the future technology tent at this year's CONEXPO-CON/AGG construction trade show: the use of carbon fiber in concrete to turn it into a conductor, leading to reduced energy costs in buildings, longer-lasting roads that require less maintenance, and wireless charging of vehicles driving on "smart roads."

Think, just for a moment, how much carbon-based material it would take to produce carbon fiber on this kind of scale, and it's not hard to imagine that the future could hold some exciting possibilities for uses of coal that haven't historically been part of the market.

As the new technologies of the current century develop – from the increasing use of "green" energy technologies that require more rare earth elements to the development of durable construction methods that incorporate large-scale use of carbon fibers – the sky is the limit in terms of the potential for technology

to drive a new category of demand for coal.

We don't know yet which products will ultimately drive demand. Some things that are currently being developed will take off in the future; others may fail. But the future holds great potential, not only for what's currently in the pipeline but also for other uses and technologies that haven't been identified yet.

It's possible, some say, that in the future these high-tech uses for coal may replace and even surpass traditional uses. A decade ago, such a prediction may have sounded like pie in the sky, but today the idea of a third type of industry driving demand for coal is looking much more plausible.

Some of these new carbon-based materials and products are no longer theoretical; they're real, and they're hurtling toward commercialization. Just as the high-tech mines of today are a far cry from the simple mining methods of your great-granddaddy's era, the processing and uses of coal tomorrow will be a far cry from what we have had in the past and even what we have today.

Sometimes it may feel like the wheels of technology turn slowly, but if you look back over the decades, it's amazing how much progress has taken place. That progress is set to continue – in a direction that's not only good for the coal industry, but for building a better world.

Worry-Free Load Zones

Rely on Richwood Load Zones. Worry-Free by Design.

Clean-up costs, lost product, safety and environmental issues are a real risk to productivity. With a Richwood designed load zone, this application is saving 40 hours of clean-up and close to \$19k in components every month. What would it mean for your productivity if loading and spillage issues were eliminated?

Contact Richwood today for your on-site evaluation.



RICHWOOD IMPACT SADDLES®



BEFORE



AFTER

www.richwood.com (800) 237-6951 | (304) 525-5436 | info@richwood.com

©Richwood2019



“Coal generation has turned out to be a surprising bright spot in energy tech’s universe of late. Evidence of that came in the U.S. Department of Energy’s far-sighted “CoalFIRST” initiative, which aims to develop small, modular coal plants of the future that adapt to the changing electric grid and produce power with near-zero carbon dioxide emissions. Under CoalFIRST, DOE has earmarked up to \$100 million for coal research and development projects. Thirteen projects were selected last year for early-stage

research and development. The new generation of coal plants will be small compared to conventional coal plants, ranging from 50 to 350 megawatts. But they will have high overall efficiency – 40 percent or greater heating value than today’s plants – and consume less water. With the ability to capture carbon for underground storage, new coal plants will be on target to provide electricity in the years ahead with near zero-carbon emission.”

– Michael D. Mann, executive director, Institute for Energy Studies at the University of North Dakota College of Engineering & Mines.

“Instead of pouring money into dividends and buybacks, the nation’s largest coal producers say they’re hoarding cash to weather what they see as an impermanent storm. Overall, the industry returned more than \$1 billion to investors last year before retrenching. The goal this year: Be ready to start mining again and paying dividends at the first sign of a market revival. That’s betting the prices will bottom out in the first half of 2020 before rising in the second half as production declines and global consumption gains.”

– Will Wade, Bloomberg Green.

COUNTON COAL

“There are currently 19 operating facilities worldwide that can capture, compress, transport and store CO2, according to the Global Carbon Capture and Storage Institute. While several dozen more facilities are in development, we are an order of magnitude off what’s needed. According to the Institute, 2,000 carbon capture facilities need to be up and running by 2040. Fortunately, bipartisan support in Washington to greatly expand CCS development and deployment is matched by voter willing-

ness to see the US take just such a leadership role. In a recent poll, when asked whether the US should assume global leadership in developing and deploying advanced coal and emissions-reduction technologies, 63 percent of respondents said yes; just 11 percent disagreed, with the remainder not offering an option.”

– Count on Coal (countoncoal@nma.org.)



“Coal remains a vital source of the always-on energy that powers our economy, and we must continue working to ensure the market properly values

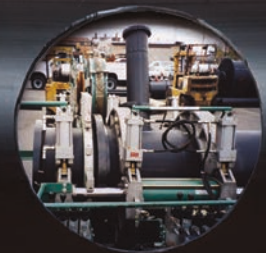
the reliability and resiliency characteristics brought to the nation’s grid, as well as to develop new technologies and invest in research to help meet global energy demand. We will continue working on these priorities and others to ensure reliability, good-paying jobs, and affordable energy prices for businesses and consumers.” –North Dakota Senator John Hoeven, Williston Herald.

“The challenge of meeting soaring global energy demand while simultaneously reducing emissions begs for breakthroughs in technologies that can

YOUR
Drawings
TO
Fabrications



MOVES...



Because **we** share
your vision.

reduce emissions from the energy infrastructure the world currently has and from the fuels it will continue to use. The most critical technology to doing so, as Director Birol has so rightly stressed is carbon capture. Will the message finally get through?" – *Count on Coal*

“Regardless of where you stand in the man-made global warming debate, coal-based electricity is vital to keep us warm (or cool), safe and productive. What is needed is some context. Renewable energy sources cannot power our world today, so it is not a question of if we use coal, but how. In May 2019, the North Dakota Transmission Authority released Power Forecast 2019 showing the increase in demand for electricity over the next 20 years. The study focused on western North Dakota found that demand for electricity would grow by 44 percent to 71 percent over the period. The study projects that North Dakota will require between 670 and 1,000 megawatts of new baseload generation capacity to meet future demand. Currently, the state’s baseload capacity is 4,390 MG, but that includes 1,100 MG generated by Coal Creek Station, electricity that is sent



to consumers in Minnesota and Wisconsin. The future of Coal Creek Station is in doubt. Policy makers, both state and federal, need to decide whether an “all of the above” energy policy really means “all.”

– *Bette Grande, Inforum, North Dakota.*

“The Ghanaian government’s decision to continue mining operations provides the company with the flexibility to enable the movement of personnel and cargo so that the Wassa and Prestea gold mines are able to continue operations. The company’s guidance for 2020 therefore remains unchanged. The company is working with other companies and industry bodies in support of the government of Ghana’s response to COVID-19. As part of Golden Star’s leadership and management of the COVID-19 response, the Wassa and Prestea operations have ceased non-essential travel to and from the affected regions.” – *Global Mining Review.*

“COVID-19 is a human tragedy and we all have to play our part as the pandemic spreads. Rio Tinto’s first priority remains the health and safety of all of our employees and communities. During these uncertain times, we continue to deliver products to our customers sup-

ported by our global sales and marketing teams. Our focus is to maintain a business as usual approach with many safeguards, at a very unusual time. We are not at all complacent. Safety and health comes first as we keep delivering for our customers, our host governments and communities.” – *J-S Jacques, Rio Tinto chief executive.*

“During these turbulent times the resources sector was considered an essential service by both the federal and state governments to fast track the economy to recovery mode. A survey found that 58 percent of companies were maintaining or planning to grow current workforce numbers over the next 3 months and only 21 percent expected a decrease. The survey results show COVID-19 has not significantly impacted jobs in our section in Queensland at this stage with a similar survey taken in the December quarter reporting that 15 percent of companies were expecting to decrease their workforce. Every company is working to make working arrangements more flexible with 95 percent of companies offering either additional sick leave or access to future balances to support their workers through COVID-19.” – *Ian Macfarlane, chief executive, Queensland Resources Council.*

YOUR
Fusion Requests
TO OUR
McElroy Full Service

YOUR
Projects
TO
Delivery

YOUR
Challenges
TO
Opportunities



Because **we** provide **you**:

A Certified Sales/Service/Rental Center

Certified Fusion Training

Equipment Certification

(On-Location & In-House)

APRIL Issue

Because **you** will get it

from **us** on time,

within budget.

Because **we** supply

solutions.

800.353.3747 • leesupply.com

CoalProTec Show Rescheduled for November

by Debra McCown Thomas

The CoalProTec trade show and conference, originally scheduled in April, has been moved to November due to concerns about the spread of the Covid-19 coronavirus. This year's event will now be held Nov. 9-10 at the Embassy Suites in Charleston, West Virginia., said Mel Laurila, executive director of the Coal Preparation Society of America, which hosts the biennial event.

"We think we're giving it enough time, and we're far enough away from MINExpo and [other events] that we're not conflicting," he said, adding that the new location was chosen over the convention center to reflect a smaller anticipated size of the event due to the postponement.

Laurila said the organization is also planning to work with the Midwest Coal Preparation Society, which puts on a coal show in the spring of odd years, to do something in conjunction with its 2021 event in Evansville, Indiana.

"We have to continue to hold the conference and exhibit because we think it's an important meeting in the industry where people, specifically in coal preparation, can get together," he said. "We hope that the folks who were planning on coming to Lexington in April will show up in November."

One important aspect of the biennial conference is a networking event, which typically brings people who work in coal preparation across the country together in one room. This reception is now scheduled for Monday, Nov. 9.

The program in November is expected to be similar to what was initially planned for April, with a lot of information for coal producers that are trying to compete in current market conditions. Updated information about the event will eventually be available at <https://www.coalprepsociety.org/>.

Some workshops that were planned for the April conference are not scheduled for November and may be held in Evansville next spring; otherwise, the technical program is to remain intact.

"We've got a keynote session...where we have James McCaffrey of Consol Energy. He's the chief commercial officer, and he's going to talk about the coal industry in general and where he sees it going, how the competitive arena between natural gas and coal is going to go over the next few years, and the whole worldwide business of trading coal, and what kind of headwinds we're going to face on that."

According to a preliminary agenda, "Thirteen technical presentations...will cover the latest developments in advanced coal preparation practices and techniques, the design and operation of slurry impoundments, and advances

in dry coal upgrading techniques."

One reality for the industry, Laurila said, is that there will be more coal-fired power plant closures this decade – but that doesn't mean coal will become insignificant.

"As a fuel for power generation, coal is going to continue to decrease. Some estimates are showing it's already been cut in half in the last decade... and in the next decade, my best guess from what I've read is it will be cut in half again. But it's still a significant industry, and it will still be a part of the energy mix," he said.

"And it's still worth being involved in. You can still make money in coal, but you're going to have to be smart about it, and that's one of the reasons why we're putting on this conference."

At the present time, Laurila said, being competitive in coal means relying on technology to improve the coal preparation process, since that's where final control over the product takes place.

"You're going to have to make sure that you're providing the best quality product, whether it's thermal coal or particularly metallurgical coal, for your customer, and that's going to require instrumentation, it's going to require smart practices, and maybe things that operators weren't always so careful about in the past," he said.

"And you know coal preparation plays a huge role in that because what comes off that clean coal belt determines how well you're able to sell that customer or keep that customer."

Laurila expressed hope about technologies that will impact the coal industry. In terms of electricity, he said the development of high-efficiency, low-emission power plants which capture and sequester their carbon dioxide could mean new coal-fired power plants are built in the future. Relatively small-scale, modular power plants may also become more prevalent in the future.

In terms of other technologies, he pointed to the use of coal in making carbon fibers and the production of rare earth elements as a byproduct of coal processing as potential future sources of revenue. In the case of rare earth elements, he said,

both the processing waste stream and existing waste can be processed, adding a revenue stream that adds to profitability at a plant site.

"Coal's not going anywhere for a long time, and yes [in the foreseeable future] the industry will continue to shrink," Laurila said, but it will be at a slower pace than it has in the past, and there will always be a need for technology improvement – and that's why we will still be around." *Mining People*



2016 CoalProTec



SAFETY, SERVICE, AND INNOVATION

Our commitment to you, our customers, is guided by three words; SAFETY, SERVICE, and INNOVATION. We are constantly moving forward creating products of the highest quality and providing you with the services which make the impossible possible. From our Engineers to our Technical Sales Representatives we work tirelessly with you to ensure your safety is at the forefront. We will be with you every step of the way. Our ability to provide our customers a complete range of complementary products and services ensures quality, efficiency and availability resulting in reduced costs, reduced lead times and increased customer satisfaction!



The Rush for Rare

by Debra McCown Thomas

The pilot plant facility that the University of Kentucky researchers are using to recover the rare earth elements from coal refuse with the help of DOE funding.

The term “Rare Earth Elements” is somewhat of a misnomer. These elements – a group of 17 metals that are commonly used in producing electronics – aren’t actually all that rare.

“They’re in your backyard. If you dig it up and analyze your soil, you have rare earths there,” says Rick Honaker (right), professor in the University of Kentucky’s mining engineering department and principal investigator there for research on recovering REEs from coal refuse. “When you play in the sand in Florida, you are playing with rare earths because there are rare earths in that sand.”



The reason they’re called rare earths, Honaker says, is that it’s rare to find deposits that are economic to mine and process into usable form. As a result, the rising demand for these materials – which are critical for making things like electric cars, wind turbines, consumer electronics, and weapons systems – means people are looking for new sources of rare earth elements that can be processed economically.

In the US, a major piece of that effort is looking at potential REE

sources associated with coal: coal refuse, coal ash, and acid mine drainage. That’s because these sources have a relatively high concentration of REEs that are critically important, low in supply, and increasing in demand.

Based on an assessment conducted by the U.S. Department of Energy and the National Energy Technology Laboratory, the amount of REEs that could be recovered from coal-based sources is substantial. The practical meaning of that, of course, depends on what it takes to recover them and the cost to do so relative to the price of the recovered material – but the research is very encouraging.

Since the effort began in earnest in 2014, important milestones have been reached at the University of Kentucky, West Virginia University, and others in developing and proving ways to process coal-based materials for REEs.

All three areas being looked at – acid mine drainage, coal refuse, and coal ash – could be promising domestic sources of rare earth elements, says Paul Ziemkiewicz (right), director of West Virginia University’s Water Research



Earth Elements



Institute, which has already built a successful pilot plant and has got the process well on its way to commercialization.

“I want to see every one of these routes be successful in order to create a domestic supply chain,” Ziemkiewicz says. “Our next project – the one that we’re just starting now with DOE [the U.S. Department of Energy], we will build a roughly half-ton-a-year processing facility, and that will take acid mine drainage and create a pre-concentrate that we will then turn into a high-grade mixed rare earth oxide on site.”

In Kentucky, Honaker says the pilot plant built to extract rare earth elements from coal refuse has also been a success, demonstrating the production of a highly concentrated rare earth oxide from refuse with minimal processing cost – and the processing is not overly complex.

“We pull out the coarse refuse that has the high [concentration of] rare earths, grind it down to 1 mm, then we heat the material up to decompose the mineral that contains rare earths, and then we put it into a leach system using sulfuric acid to extract the rare earths in solution,” he says. “Then we use a few stages of selective precipitation, and that’s how we produce the concentrations.”

Honaker says a survey of coal processing plants shows there

are enough REEs in the waste stream of just a fraction of the coal processing plants currently operating in the US to meet current demand for REEs.

“I believe that the resource in coal is real,” he says. “We have proven that you can extract the rare earths and produce a high-quality product.”

The extraction of REEs from coal ash is the most complex of the three, but Massachusetts-based Physical Sciences Inc. has developed a process to accomplish this and has also developed a pilot-scale project. Research facilities around the country have been involved in the effort on research to extract REEs from coal-based sources – both public and private, both inside and outside of coal-producing regions.

One thing that makes the idea look so promising is the fact that the processing of waste for REEs can be done as an add-on to existing processes. With acid mine drainage it’s an add-on to existing water treatment, which removes the elements along with pollutants, creating a sludge that can be processed for recovery of REEs. With coal refuse, it’s an add-on to coal processing itself – and one potentially capable of accepting stored waste as well as the current waste stream.

The Rush for REEs continued



Typical Acid mine drainage (AMD) treatment plant: Lime addition, aeration



Metal rich sludge settling out in cells allowing clean water discharge at far end.

For the coal industry, the ability to add an extra revenue stream – especially one that comes with the potential by-product of environmental cleanup – could be a welcome addition.

So, what exactly are rare earth elements? There are 16 elements categorized as REEs, including scandium, yttrium, and a group of 15 known as the lanthanide series: lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, and lutetium.

The specific uses of each element are different, but all of them have important uses in the production of today's high-tech electronics. Several exist in relatively high concentrations in coal-based sources.

Historically, the demand for rare earth elements began with the advent of color television in the mid-20th century. At that time, the europium needed for the manufacture of color TVs was produced by the Mountain Pass Mine in California; the United States was the world's top producer of rare earths.

China came on the scene as a producer of REEs in the 1980s and increased production over the next couple of decades in response to skyrocketing demand that coincided with the development of new technologies, ultimately charging such low prices for its rare earths that other operations, like Mountain Pass, could no longer compete.

About a decade ago, China – which manufactures a significant percentage of the world's electronics – cut back exports of REEs, driving the price up significantly and creating concern as other countries recognized the danger of being dependent upon a single source for materials they rely on.

The recognition of this global dependence highlighted the fact that any disruption – whether an internal issue like an epidemic or a deliberate political move – could negatively impact the whole world.

And with China, there's definitely a control issue, Honaker says: The government has shut down independently owned operations even within China, and as a result all of China's rare earth production facilities are state-owned and state-operated; the Chinese government effectively controls the market price as well as the supply.

"China is essentially the OPEC of rare earths," he says, drawing a comparison with the oil cartel that caused a crisis in the early 1970s when its members stopped selling oil to the United States.

Concerns about national security stemmed from the need for REEs in technology used by the U.S. Department of Defense, Honaker says – and that prompted the US government to begin funding research into domestic alternatives. Rare earth elements are used in all sorts of military technology: everything from night-vision goggles to communications to precision-guided weapons.

After DOE did an assessment of what might hinder the development of important technologies, the agency

identified several rare earth elements among the most critical materials and funded the Critical Materials Institute to find both substitutes and new sources of supply. Among the materials the institute has focused on: dysprosium, terbium, europium, neodymium, yttrium, lithium, tellurium, cobalt, manganese, graphite, indium, and gallium.

Its current research projects aimed at diversifying supply of REEs include research on lithium extraction from brines; rare earth extraction from ores, tailings, and processing streams; recovery of critical materials (gallium, germanium, indium, and tellurium) as by-products of existing industry; and work on specific separation and processing technologies.

By the mid-2010s, the significant concentration of rare earths in coal was recognized as an important potential source, and DOE got involved to fund the pilot projects that have shown such promising results.

But there's still the question of dollars and cents: Can coal mine drainage, refuse, and ash be processed cost-effectively enough to compete with Chinese REEs?

Taking into account that China has concentrated primary sources of some REEs, lacks rules requiring environmental stewardship, and has a government-run economy whose planners can sell material at a loss to maintain market share, how can US-based companies compete – even if their costs are low?

At current market prices, can American companies produce enough REEs from secondary sources to make money? And what will it take to attract investors?

There's no question the demand for rare earth elements will continue to rise, Honaker says – especially with Europe's mandate for electric vehicles. Some key REEs needed to produce them – neodymium, praseodymium, and dysprosium – are found in significant quantities in coal refuse.

Ziemkiewicz says he sees a combination of all three coal-based sources feeding into a single processing industry, balancing each other in terms of cost and availability for a consistent supply.

Of the three, mine drainage requires the least processing, he says, since the natural leaching process that created



Bench scale continuous flow plant.



it happen.

Things go bad when a country loses control of its supply chain, Ziemkiewicz says; its power in the world can quickly be lost – a fact of history in both ancient and modern times.

the mine drainage to begin with has already done the initial work of putting the REEs in solution. Next simplest is coal refuse, which requires a little bit more processing; for it, the REEs must be leached out using acid. Ash is the most complicated of the three; because of its chemical structure, a more acidic process is required – and that creates additional challenges and cost.

Ironically, acid mine drainage – the most economic coal-based source of REEs – is in relatively limited supply thanks to three decades of effort to reduce its presence as a pollutant – but now it's in a position to become an important source for REEs.

"If you think of a typical ore body, you have the part of the ore body that's low-volume and easy to recover, and that's normally what you go after when you want to pay off your capital expenditure on your mining operation and your processing operation: the high-grade part of your ore body," Ziemkiewicz says. "[In the case of coal-based sources of REEs] that's mine drainage."

With all three sources, Ziemkiewicz says, once the rare earth oxides are separated out, the process of refining them into individual sellable products is the same – and it's accomplished by solvent extraction, a well-understood technology.

The facility that WVU is preparing to build is part of a mine drainage water treatment plant scheduled for construction by the West Virginia Department of Environmental Protection – one of several such plants that are planned in the state. The hope is that, in addition to demonstrating the recovery of REEs on a commercial scale, it will also generate a revenue stream for the plant.

the facility] – and that should be around 95 percent mixed rare earth oxides – we'll take that back to our pilot plant that we already have running at WVU, and we'll start doing the elemental separations there," Ziemkiewicz says. "I think we're about two years out from where we have actually a continuously operating commercial plant."

Ultimately, both researchers point to the importance of developing a domestic supply chain for rare earth elements in the US – even if it initially requires subsidies to compete with artificially reduced Chinese prices. And they hope their work on the recovery of rare earth elements from coal-based sources can help make

Whether it begins with US fighter jets that can't be built without materials from China or the latest cell phone, built on American research and development, replaced in the market by a Chinese copycat product, there are problems down the line if the U.S. fails to develop its domestic supply chain for rare earths and critical materials.

"I think we had this starry-eyed notion that international global supply chains were a wonderful thing, and we're starting to see the limitations of that," he says.

"By shortening the supply chain and keeping it under domestic control, you only increase your national security. Whether its defense or whether it's commercial, having that local supply has always been critical. And if you look at it historically, that's why the United States has been so powerful commercially: because we've had most of what we need." *MININGPeople*

RACO

lift

We  your ideas into reality.

Electric Actuators

RACO Ball & ACME Screw Electric Actuators provide a limitless array of alternatives for any application.

- Modular design allows for Straight, Right-angle, and C-Design variations.
- Thrusts from 70 lbs. to 225,000 lbs.
- Linear speeds from 0.5"/sec. to 30"/sec.
- Strokes up to 20 ft

RACO International, L.P. • 1-888-BUY-RACO
E-mail: raco@racointernational.com • www.racointernational.com

"We'll take that concentrate [produced by



Women Who Rock

by Debra McCown Thomas

Elena Mayer was new to mining, but that didn't stop her from bringing people together to help make a difference for women in the industry.

"There are a lot of passionate people in the industry," says Mayer (*right*), who is president and CEO of Women Who Rock and the director of client relationships in mining at PwC Canada, a Toronto-based global business services firm, explaining what attracted her to mining even though, as a woman, she found herself in a small minority.



"I was actually one of few women in a class of 37 in the Global Mining Management Program at the Schulich School of Business," she says – which got her thinking that she may have an opportunity to help. "The more I got entrenched in the industry, the more I realized the disconnection between women in the early stages of their careers and the people leading the industry."

Mayer, who grew up in the former Soviet Union dreamed of being a professional ballerina, discovered the mining industry while working at a corporate law firm in Toronto, and decided that was where she wanted to pursue a career.

When she floated the idea of founding a new organization to help women pursue careers in the mining industry, she says two of her mentors, Maureen Jensen (*right*) (chairman and CEO of the Ontario Securities Commission) and Anna Tudela



(then vice-president of diversity at Goldcorp), encouraged her to make the idea a reality. So, during her second year of business school in 2013, she founded a new organization: Women Who Rock.

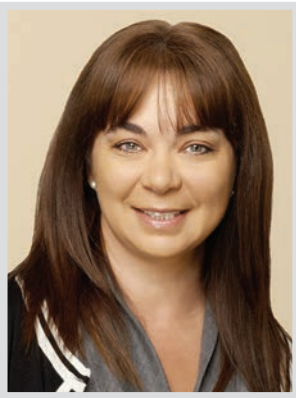
"We decided to focus on women in the late stages of their university careers and early stages of their professional careers," she says. "Our strategy is 'Connect, Collaborate, and Communicate,' and we've been active in the Canadian mining industry in the last seven years with the goal of creating mentorship relationships and igniting interest in career possibilities."

The effort includes connecting women to resources and mentorship within the mining industry; collaborating with companies, organizations, and agencies in mining for events; and communicating positive stories about mining to the world. It's had a small but significant impact.

Women Who Rock is one of many organizations that have been formed in recent years to promote and facilitate the welcoming of women into the mining industry, where they've historically made up just a small percentage of the workforce. Companies have found that bringing more women on board has positive outcomes – not just in a subjective sense, but also for the bottom line.

"Gender diversity increases safety, enhances reputation, and leads to better financial outcomes for organizations," says Monica Moretto, vice president of diversity and sustainability for Vancouver-based Pan American Silver. "At the corporate level, mixed-gender boards financially outperform all-male boards."

Moretto (*right*) cited a report by Women in Mining Canada that identified several advantages of companies with mixed-gender boards over all-male boards: stronger strategic direction, stronger accountability, more objective decision-making, double the dividend yield, increased return on capital, and increased ratio of enterprise value to reserves.



Moretto says the mining industry is also facing a labor shortage – and women are a big part of the potential talent pool for companies to draw from in recruiting the next generation. In Canada, she says, women make up just 17 percent of the labor force in mining – compared with 48 percent in other industries. And in today’s high-tech world, their skills are needed more than ever.

“Mining is also becoming an increasingly complex business. It is no longer what people imagine: going somewhere remote and digging a hole. Nowadays, in addition to technical skills, there are a lot of skills that are attributed to women and are needed in the industry, including negotiation, mediation, and team-building,” Moretto says. “Men and women possess different types of skills, and it is the combination of those skills that brings the best results.”

In addition to the large organizations that exist to support gender diversity in the mining industry – the most well-known are Women in Mining and International Women in Mining – there are a lot of smaller organizations that are helping to make a difference.

“Unofficially, there are grassroots organizations everywhere,” Moretto says. “The spirit of supporting diversity in our industry is present whenever individuals gather to discuss how to support an inclusive workforce. In this aspect, there are supporters in exploration and mine sites and corporate offices around the world.”

Organizations like Mayer’s group, Women Who Rock, help by targeting specific needs in the areas where they operate.

One of the organization’s efforts, for example, has connected more than 70 women to mining industry leaders – and connected some of them with jobs – through its annual “Auction for Action” program, in which companies sponsor promising students to “bid” on lunch with corporate leaders. The proceeds help Mining Matters, an organization that educates children about mining.

“We’re quite proud of this program because we feel like it not only benefits the women and the charity, but it also benefits the leaders because it gives them an opportunity to give back to the community and inspire the next

generation of women who would lead the industry,” Mayer says.

For women in the middle years of their careers, she says, the organization promotes mentoring and other efforts focused on inclusion, retention, and removing barriers that traditionally have stood in the way of women seeking to rise into leadership roles.

In a program that began in fall 2019, Women Who Rock is partnering with mining companies to organize and run “Women who Dare Seminars,” which provide opportunities to engage in peer discussion, gain insights into leadership fundamentals, and build relationships. The next two events are scheduled this fall in partnership with Pan American Silver and Kinross Gold.

To help share the importance of mining, Women Who Rock also seeks out fun ways to collaborate with organizations outside the industry. For example, “We brought together fashion industry people and mining industry people under the same roof to talk about the connection between jewelry and mining,” Mayer says, “and it was an eye-opening experience for both parties.”

In the big picture, she says, bringing more female talent into the mining industry is not just about women; it’s also about companies being able to reap the benefits of a more diverse workforce – and those who’ve championed the efforts include male industry leaders.

But Mayer says her experience with Women Who Rock shows that you don’t have to be in corporate leadership to make a difference – and others should feel empowered to help where they can.

“If you’re passionate about something, you can bring positive changes at any stage of your career. You don’t have to be a vice-president or a CEO or some nice-sounding title; all you have to do is have conviction of your objectives and passion,” she says.

“I find that in mining, when people see value in what you’re saying, it doesn’t matter what stage of your career you’re in. I guess it’s part of the adventurous spirit of the mining industry, but people will listen, people will support, and people will help you.” Mining Matters



Women Who Rock Hard Hat and High Heels Event

Warrior Developing a New Underground Coal Mine

A longwall coal mining device used to extract metallurgical coal in Alabama

Warrior Met Coal plans to develop a new \$500 million underground coal mining facility in northern Tuscaloosa County, Alabama, over the next five years, creating 350 new jobs. The project, to be located on Brandon School Road, started construction in March with operations projected to begin during the second quarter of 2025. Warrior mines non-thermal metallurgical, or met coal, used in steel production by metal manufacturers in Europe, South America, and Asia. The development will be a single longwall mine and is expected to have the capacity to produce an average of 4.3 million short tons per year of premium High-Vol A met coal over the first 10



years of production. The project is estimated to produce more than \$11 million in education taxes from new construction and new purchases from the initial phase. Three recent investments in West Alabama amount to almost \$1.4 billion in funds being spent on the area's coal industry. (Courtesy of the Alabama Coal Association ByWilliamThornton/wthornton@al.com)



Continuous miner operations.



Coal handling and processing activities at Poplar Grove.



Raw coal stockpile at Poplar Grove

Paringa Resources, Perth, Australia, is selling its Poplar Grove mine in McLean County, about 30 miles south of Owensboro, KY, operated by Hartshorne mining Group. Paringa has filed for Chapter 11 in the U.S. Bankruptcy Court for the Western District of Kentucky. The Poplar Grove mine, as well as the undeveloped Cypress coal project located nearby and other business assets are offered for sale. Hartshorne will continue to operate one of two units of the mine during the bankruptcy and sale process.

PROFILE Products LLC, Buffalo Grove, IL, has acquired HydroStraw, LLC, which includes all HydroStraw's erosion control and seed product lines, as well as the company's Rockford, WA, production plant/distribution center and employees. The acquisition augments Profile's erosion control technologies with hydraulic mulches, equipment and seed businesses, complementing Profile's range of products.

Stellar Industries, Garner, IA, adds Curry Supply of Gilbert, AZ to its distribution network. Curry is a coast-to-coast operation with locations in Pennsylvania, Texas, and now Arizona. Curry offers a full line of Stellar TMAX Service Bodies and both heavy and light-duty telescopic service cranes. Also, Curry will carry Stellar's complete line of demountable products including

hooklifts, cable hoists, and container carriers.

CONSOL ENERGY

CONSOL Energy has invested in an innovative coal-to-products market by acquiring a 25 percent equity interest in CFOAM Corp., a manufacturing company that uses coal to products high-performance engineered materials from coal for the industrial, aerospace, military and commercial product markets.

Rio Tinto and the Society for Mining, Metallurgy & Exploration (SME) have signed a multiyear partnership that will provide professional development opportunities to Rio Tinto employees. Rio Tinto will play an active role across the SME network, with focus on promoting best practices in health and

safety developing the next generation of mining professionals. Rio Tinto will sponsor a competition open to SME's 77 university-based student chapters, which challenges participants to find a solution to a real-life situation. Rio Tinto will also be a sponsor for SME's Young Leaders Network and an SME Foundation Roundtable partner, which supports a pipeline of mining academic resources.

A proposed joint venture by The Genesis Mine, outside of Center Town, KY, will be closing, putting 250 coal miners out of work. The closing will cost Ohio County up to two million dollars in coal severance and other tax revenue.

Dominion Energy plans to deactivate its two remaining coal units at the Chesterfield Power Station, once the largest fossil-fuel fired power plant in

Virginia. The Birchwood Power Partners also announce plans to close its King George facility, which has been producing energy for Dominion since 1996. The plant is slated to close in February 2021. Combined, the Chesterfield and Birchwood retirements will take more than 1.2 gigawatts of coal-fired energy offline. Coal in Virginia has declined from its peak in 1990 when 46.6 million short tons were mined in the Commonwealth. In 2018, according to data, only 13 million tons of coal was produced in Virginia.



Cryopeak LNG Solutions Corporation, Richmond, BC, has completed the largest ever North American delivery of liquefied natural gas by truck, with the shipment going to power the Silvertip mine on the Yukon/BC border owned by Coeur Silvertip Holdings Ltd. The shipment of LNG totaled approximately 18,000 gallons.

Golden Predator Mining Corp., Vancouver, BC, has signed a Letter of Intent with EnviroLeach Technologies Inc. and enCore Energy Corp. to establish Group 11 Technologies Inc., a US-based technology firm focused primarily on non-invasive extraction technology utilizing environmentally friendly liquids to recover gold and other metals.

Martin Marietta will move its corporate headquarters in Raleigh, NC to a new office building in 2021. The company leased the new five-story, 125,000-sq.ft. GlenLake Seven office building. Construction began on GlenLake in the first quarter of 2019 and is expected to be ready for use during the first quarter of 2021. It will include a fitness facility, conference center, café, and activated outdoor space, according to a news report.

Industrial Flow Solutions has moved to a new location at 104 John W. Murphy Drive, New Haven, CT 06513. The



Rio Tinto Invests \$1.5 Billion in Kennecott Copper Mine

Rio Tinto is investing an additional \$1.5 billion in its Kennecott copper mine (Bingham Canyon) to extend its life until at least 2032, guaranteeing job security for thousands of workers. The investment will allow mining to continue into a new area of the ore body and deliver close to one million tons of refined copper between 2026 and 2032. With this addition, Rio Tinto has invested more than \$5 billion in modernization, environmental stewardship, and mine-life extension initiatives since it acquired Kennecott in 1989. Kennecott delivers almost 20 percent of the US's copper production.

As one of the largest copper producers in the United States, Rio Tinto Kennecott comprises approximately 20 percent of US annual copper production. The Bingham Canyon Mine is one of the top producing copper mines in the world with production at more than 20 million tons.

The Bingham Canyon Mine is the largest man-made excavation on Earth. It measures two and three-quarter miles across at the top and three-quarters of a mile deep.



Peabody Energy and Arch Coal, both headquartered in St. Louis, would “unlock synergies” of \$820 million, the companies say. Focus of the move would be the combination of Peabody's North Antelope Rochelle Mine and Arch Coal's Black Thunder mine – surface mining operations near Wright, WY. The properties border one another, and are the country's two most productive coal mines. The Federal Trade Commission has filed an administrative complaint challenging the proposal to combine some of the companies' assets in coal-production regions of the American West, such as Wyoming's Powder River Basin. However, the coal companies intend to continue their pursuit of the joint venture.

company has phased in the relocation of employees and equipment from the Old Saybrook, Prospect, and Monroe plants, and opened the doors to a new manufacturing facility in New Haven.

Excelsior Mining Corp., Phoenix, AZ, has a purchase and sale agreement with Trafigura Trading LLC for 100 percent of copper cathode production during 2020 from the Gunnison Copper Project in Southern Arizona. The company is forecasting first copper production in Q2 of this year.

Golden Predator Mining Corp., Vancouver, BC, reports positive drill

results from its 2019 drill program at the Brewery Creek Mine project, near Dawson City, Yukon. Step-out drill holes at the Lucky Zone along Brewery Creek's Reserve Trends extended gold mineralization an additional 100 m of strike length southwest of the Lucky Pit. Nineteen of the 20 drill holes reported significant gold grades.

Warren Buffett's Berkshire Hathaway has pulled out of a planned investment in the Saguenay LNG project in Quebec, Canada, suggesting that harder times are ahead for the country's LNG ambitions. CBC reports

continue

the investment company had shelved its plan to put \$3 billion into the \$7.1 billion LNG project because of the “current Canadian political context,” according to a spokeswoman for the company. (ieefa)

Sunrise Coal has permanently closed its Carlisle mining operation in Sullivan County, IN, in an effort to reduce financial losses, putting 80 miners out of work. Brent Bilstrand, president and chief officer of Hallador Energy Company, said the closure will further reduce the company’s overall cost structure. Some of Carlisle’s equipment and parts will be moved to the Oaktown mining operation in Knox County.

Foresight Energy has filed for bankruptcy with plans to hand ownership to its creditors. Foresight listed between \$1 to \$10 billion in assets and liabilities in the same range in Chapter 11 documents filed with the court. The restructuring plan, which allows the company to stay in business, would cut debt by about \$1 billion by swapping \$1.33 billion of debt for equity. The plan would leave Foresight with just \$225 million in new secured debt, CEO Robert Moore said in a court declaration.

The San Juan Generating Station, Santa Fe, New Mexico, will soon shut down. Power plant jobs will be lost, as will coal mining jobs. The Energy Transition Act (ETA) will ease the economic hardships that will result from the shutdown. The ETA includes the Apprenticeship Assistance Act, requiring employment of apprentices during construction of new electric facilities in increasing percentages over time, with priority given to workers from communities most affected by the plant closing.

The Montana Department of Environmental Quality has given the Navajo Transitional Energy Company preliminary approval to a 977-acre expansion of Spring Creek, a 275-worker strip mine NTEC purchased from Cloud Peak Energy last year. The expansion includes about 72 million tons of coal and would extend the life of the mine by about four years, to approximately 2031. Final approval is pending. Spring Creek is Montana’s largest coal mine. It produced almost 14 million tons of coal in 2018, ranking it the eighth largest mine in the US, in terms of coal production.

Cape Cod Aggregates Corp., Massachusetts, introduces the Metso SiteBooster plant optimization, developed to help existing stationary aggregates quarries to upgrade and boost current crushing and screening processes. Metso’s expertise in crushing and screening is wrapped into an optimization solution that helps quarry operators achieve their goals today and in the future. In 2019, Metso celebrated the milestone of 1000+ complete and modular stationary plant deliveries as well as optimization projects for brownfield plants worldwide. Contact Bruno Peix at +33 608 2796 36.



Pictured from the left: Antonio Lorusso, Owner, S.M. Lorusso and Sons and Cape Cod Aggregates; Paul Lorusso, Owner, Cape Cod Aggregates; Jason Whitney, Owner, Whitney and Son Inc., and Eric Bjornson, Distribution Manager for Eastern USA, Metso.

The Buckskin Mine, north of Gillette, WY, plans layoffs in the near future as a response to lower production at the mine and a weak domestic market for Powder River Basin coal. According to MSHA, Buckskin had an overall employment of 222 at the end of 2019. The mine produced 17.6 million tons of coal in 2019, a 30 percent increase over the 13.5 million tons in 2018. Buckskin Mining will do what it can to find other jobs for some of the affected workers, a spokesman said.

The Alabama Port Authority announces the largest bulk carrier to ever call on the Port of Mobile loaded over 133,000 short tons of metallurgical grade coal at its McDuffie Coal Terminal. The Newcastle Max class bulk carrier, MARAN COURAGE, reportedly measures 984.2 feet in length and a width of 144.3 feet. All of the carrier’s cargo consisted of Alabama met coal bound for Asian markets, the release states. Alabama’s met coal market is in demand and on the upswing with nearly \$1.4 billion in recent or planned mining investments. (Yellowhammer News/ Twitter@sean_yhn).

Newmont Corporation has successfully completed the sale of its Red Lake complex in Ontario, Canada to Evolution Mining Limited and received cash proceeds of \$375 million with future contingent payments of up to an additional \$100 million tied to new resource discoveries.

“We are pleased to complete the sale of Red Lake to a highly respected and responsible operator in Evolution. The transaction provides us ongoing exposure to future exploration upside, whilst we remain focused on our diverse global portfolio of 12 managed operations and two joint ventures, which includes eight world-class assets,” said Tom Palmer, President and Chief Executive Officer.



Under terms of the \$100 million contingent payment, Evolution will pay Newmont \$20 million for each one million ounces of new gold resources added to the existing Red Lake resource base over a fifteen year period. The contingent payment is applicable to the first five million ounces of new resources.

MINING People A Publication Dedicated to Mining and Aggregates Worldwide

The Most Unique Blend of Editorial and News in the Industry... Comparable to No Other! In-Print and On-Line

YOUR Magazine for the People, Places, and Products of Mining and Aggregates

Oz Minerals ahead of schedule despite virus

The ramp-up of production at Oz Minerals Carrapateena copper mine in South Australia is progressing ahead of schedule despite the global COVID-19 outbreak.

The Adelaide-based company has not reported any production impacts at either of its South Australian mines.

Oz Minerals began processing the first concentrate from its Carrapateena copper/gold mine in December and will ramp up to full production over the next 18 months. The first containers of concentrate have been trucked to the port, awaiting further concentrate for a first bulk shipment to customers in the coming months.

In a statement to the Australian Securities Exchange, Oz Minerals said it had achieved nameplate throughput rate for sustained periods within the first month since commissioning. A five-day continuous period at the current nameplate rate of 12,000t/day was achieved in March and one operating day saw 13,000t milled in 24 hours.

The statement said the plant had achieved strong early metal recoveries averaging more than 90 per cent for copper and 85 per cent for gold.

The company said it had also increased its ore stockpile to 305kt in preparation for any potential worsening of conditions and production is expected to progressively increase through the second half of the year to reach 4.25Mtpa run rates by year-end.

The company's Prominent Hill mine, also in South Australia's Gawler Craton region, has continued to operate to expectation with no significant disruptions to date.

Approximately 18 million tonnes of stockpiled ore is available for processing at Prominent Hill, which the company said could be largely managed from its remote operations facilities in Adelaide.

Oz Minerals chief executive Andre Cole said the health and well-being of employees and other stakeholders was a priority as the company planned for and adapted activities to the changing dynamics of the evolving COVID-19 pandemic.

He said with more than 85 per cent of the Australian sites'



Oz Minerals staff underground at Carrapateena.

workforce based in South Australia, the state's border closure would have limited impact on the continued operation of Carrapateena and Prominent Hill mines.

"The introduction of flexible work arrangements for much of our non-frontline workforce over the past 18 months has also allowed a relatively seamless transition to the current remote working environment," Cole said.

"We have planned for a range of scenarios including operating with a South Australian workforce only, extending rosters to enable isolation of sites through to 'care and maintenance'.

"As we develop our action plans our overarching objectives are the health and safety of our people, job protection and liquidity."

In its statement, the company said the A\$ copper price had proved resilient against a deteriorating US\$ spot price, and with the vast majority of the core Australian operations' cost base being A\$ sourced, the lower A\$ has provided an effective hedge against US\$ based revenues.

It said demand for copper intensive items such as air conditioners and cars has begun to improve in China in recent weeks, whilst the broader market has also been impacted by the temporary reduction in copper concentrate supply from major producing countries in South America and Africa.

Oz Minerals also operates the Antas copper mine in the Carajas province of Brazil and said no major disruptions to supply are currently being experienced at any of its sites.

"Our Brazil workforce is locally based and not currently experiencing border or other movement restrictions," Cole said.

Australia has about 6 per cent of the world's economic copper resources and is ranked third after Chile (25 per cent) and the USA (16 per cent). South Australia hosts 68 per cent of Australia's economic demonstrated resources of copper.

The state is also home to BHP's Olympic Dam copper/gold/uranium mine, which is the fourth largest copper resource in the world.

Rio Tinto will build its first in-house solar plant to power mine operations, adding to a slew of recent renewable energy pledges from mining companies. But while solar and wind have an obvious role to play in helping mining operations control their carbon emissions, the industry faces steep decarbonization challenges, analysts say. Rio Tinto says it will invest \$98 million in a 34-megawatt PV array and 12-megawatt-hour lithium-ion battery system to help power its Koodaideri mine in Pilbara, Western Australia. The solar plant is expected to cover the entire mine's electric power needs during peak solar generation hours and 65 percent of its overall electricity consumption. Rio Tinto will start building the plant soon and is looking to complete it next year. (<https://www.greentechmedia.com>)

Pavlik Gold JSC has chosen Metso as the supplier for the key crushing and grinding equipment for its ore processing plant in Magadan, Russia. The Pavlik gold plant, which commenced operations in 2015, currently produces approximately 7 tons of gold annually. With the new equipment, the plant expects to double its ore processing capacity and increase gold production.

RioTinto

Rio Tinto plans to reach first production at the Winu copper-gold project in Western Australia in 2023. The company continues drilling and geophysical testing on site, on top of nearly 140 kilometers that have been drilled.

Australia's metals & mining industry M&A deals totaled \$3.37 billion in Q4 2019, according to GlobalData's deals database. The value marked an increase of 367.4 percent over the previous quarter and a rise of 169.5 percent when compared with the last four-quarter average of \$1.25bn. Australia held a 16.7 percent share of the global metals & mining industry M&A deal value that totaled \$20.22n in Q4 2019.

Drax Energy Company is to stop burning coal at its North Yorkshire Power Station from March 2021. It will then close its two coal utilities in September of that year with the loss of



GHH from Gelsenkirchen, Germany, and MacLean from Ontario, CAN, have partnered. MacLean intends to use the new production facility in Queretaro to reach customers in Latin America and to increase service in North America, Eastern Europe, and Central Asia. The partnership gives GHH access to new sales markets, especially in the US, Canada, and Mexico. In return, GHH is supplementing its own range and introducing MacLean in countries such as Russia, Kazakhstan, Uzbekistan, and India. GHH complements its own core range of loaders, dump trucks, mixers, and scaler vehicles. GHH offers the Mine Master and Hazemag.

230 jobs at the site near Selby, UK. Coal represented about 3 percent of Drax's power generation in 2019, down from 30 percent in 2016. Coal was supplying 1.9 percent of the country's energy needs, largely replaced by gas, which provided 50 percent and wind, 17 percent. Coal is still being used for industrial purposes, such as steelmaking.

Talga Resources Ltd has environmental approval for Stage 1 mining operations at its Vittangi Graphite Project in northern Sweden. The trial permit is for extraction of up to 25,000 tonnes of graphite ore, which will be processed into concentrate at an off-site toll milling facility and refined at Talga's operations into Talnode-C, the company's flagship Li-ion battery anode product. The product provides a sustainable and cost competitive choice for battery manufacturers.

ArcelorMittal Nippon Steel India has acquired Bhandar Power Plant in Hazira, Gujarat from Edelweiss Asset Reconstruction Company. Bhandar, a natural gas-based thermal plant with an installed capacity of 500 MW, will

remain captive to AM/NS India's steel manufacturing operations at Hazira.

Metso Corporation has established a rubber and poly-met wear parts manufacturing facility in Lithuania. The new plant will start operations at the end of the second quarter of 2020. The new facility is located in the region of Siauliai in northern Lithuania, and will employ 80 people.

South Korea idled up to 28 coal-fired power plants, scaling up the country's ongoing efforts to curb air pollution, the Energy Ministry said. South Korea has implemented temporary shutdowns of the country's coal-fired power plants that are more than 30 years old since 2017. South Korea, Asia's fourth-largest economy, has about 60 coal-fired power plants, generating around 40 percent of the country's electricity. The ministry said it will cap the remaining coal-fired power plants' operations at 80 percent.

Australia is set to overtake China as one of the world's largest gold producers by the end of the decade, according to Fitch Solutions. Australia's

gold output is expected to rise from 10.9 million ounces this year to 13.3 million ounces by 2029. Australia also ranked second after Canada in respect to the number of new projects and mine expansions. Newcrest Mining's Cadia mine in New South Wales is Australia's largest gold producer in 2019, with an output of 871.246 ounces for the full year.

De Grey Mining has discovered a large scale gold system at the Hemi prospect in Western Australia, which qualifies as some of the best discovery intersections ever seen. Drilling confirmed strong mineralization at depth, with sulphide zone expanding to 20 meters wide and potential for more than 320 meters of strike.

ACWA Power, Tashkent, Uzbekistan, has signed three strategic agreements, potentially worth up to \$2.5 billion, with The Ministry of Energy of Uzbekistan to amplify power generation and develop technical expertise. The agreements include a 25-year Power Purchase Agreement and Investment Agreement – with a total investment value of \$1.2 billion – for the development/construction/operation of a 1500 MW Combined Cycle Gas-Turbine power plant; a \$1.1 billion to build wind power plants with a capacity of 500-1000 MW; and an MOU for the development of a training center.

A proposed expansion of Barrick Gold's Pueblo Viejo gold mine would extend its life until 2040 and beyond, it is reported. The project would require an initial investment of \$1.3 billion to expand the process plant and the tailings facility. Extending its life would unlock the mine's potential to increase exports by \$22 billion and generate more than \$4 billion in taxes for the Dominican Republic's economy at a gold price of \$1,500 per ounce.

India's thermal coal imports rose 12.6 percent to nearly 200 million tonnes in 2019, government data shows. However, imports of coking coal – used mainly in the manufacturing of steel – fell marginally. India imported 51.33 million tonnes of coking coal in 2019, down from 51.63 million tonnes in 2018, the data showed.

The world's largest facility for green hydrogen production from renewables

Asian Banks Are Lifeline for Coal Investments

The Export-Import Bank of China and the Japan Bank for International Cooperation lead firms that have committed \$29 billion for new coal power projects in Vietnam and Indonesia alone. China and Japan remain heavily reliant on coal-fired generation for their energy needs. Coal accounts for more than 65 percent of the power supply in China and 30 percent in Japan, and still generates more electricity globally than any other fuel. China saw an increase last year of 2 percent, resulting in a share of more than half the world's coal-fired generation for the first time. In all, Chinese and Japanese banks now hold over 50 percent of the debt facility at Sydney-based Whitehaven, compared with about 20 percent six years ago. Australia's biggest lender, Commonwealth Bank of Australia, is no longer part of the group, though Australia and New Zealand Banking Group Ltd. remains. Asian banks aren't the only life-line for coal miners, private-equity firms are now a "major source" of capital for coal deals, said Garold Spindler, chief executive officer of Australia coal miner Coronado Global Resources Inc. (yahoo finance)

has been completed in Fukushima, Japan, near the site of the 2011 nuclear disaster. The Fukushima Hydrogen Energy Research Field uses a 20MW solar array, backed up by renewable power from the grid, to run a 10 MW electrolyser at the site in Namie Town, Fukushima Prefecture. A consortium claims it is the largest electrolyser yet to produce hydrogen from clean power sources. The FH2R system can produce up to 100kg of hydrogen an hour, the consortium says. The project will be used as a test bed for mass production of green H2, with initial output directed to fuel hydrogen cars and buses in Japan.

Australia's Mastermyne reports sites that are injury free for 12 months. The six sites for Mastermyne are Peabody Energy's Wambo Mine with 1744 days, BMA's Broadmeadow miner with 1669 days, Anglo American's Grosvenor with 835 days, Whitehaven's Narrabri miner

with 408 days and Tahmoor with 274 days. To maintain safety standards and skill levels, Mastermyne commissioned a second Mynesight training facility in Wollongong New South Wales. The facility includes a simulated underground coal mining operation, which trains entrants to the underground coal environment. The facility also allows access to the Wollongong coal operations in the region to provide induction and refresher training to these workforces.

The life of the Valadero gold mine in Argentina has been extended to at least 10 years following a review of its strategy and business plan, Barrick President/CEO Mark Bristow said. He added that the aim is to extend Veladero's life of mine beyond 2030 and elevate it to a Tier One asset, defined as a mine that produces in excess of 500,000 ounces of gold per annum and has a life of at least 10 years.

continue



YOUR Magazine for the People, Places, and Products of Mining and Aggregates

Canadian miner Eldorado Gold, an existing gold-silver-lead-zinc mine located in the Halkidiki Peninsula in northern Greece, is undertaking one of the largest reclamation projects in Greece's history at the company's Olympias site in the Halkidiki Peninsula. Mining activities by a previous project owner left behind more than 2.4 million tonnes of tailings. Eldorado has been rehabilitating those tailings covering 26.5 hectares of land. Eldorado has removed the old tailings and reprocessed them and restored the soil so that it can support vegetation. The aim is to eventually return the Olympias valley to a green area.



Olympias Tailings Reclamation Area

For 2020, the Company is forecasting production of 50,000-60,000 ounces of gold, 950,000-1,000,000 ounces of silver, 9,500-10,000 tonnes of lead



Olympias Processing Plant



Aerial: Plant Nursery



Underground at Olympias



Main Access Portal at Olympias

metal and 12,000-12,500 tonnes of zinc metal. Olympias is expected to mine 415,000 tonnes of ore at an average grade of 7.4 grams per tonne of gold, 104 grams per tonne of silver, 3% lead and 4% zinc. Cash operating costs, net of by-products, are expected to be \$800-900 per ounce of gold sold.



Plant Nursery

Sustaining capital expenditures are expected to be \$30-35 million on underground development, an infill diamond drill program, mobile machinery and equipment rebuilds. In addition, 8,000 metres of drilling are planned to test new exploration targets in the mine area.

Growth capital is expected to be \$10-15 million for 2020, including underground maintenance facilities, underground development relating to supporting increased mine production, and work on an expanded substation.



Queensland has approval for the development of a 1,200MW wind project to be located in State Pine Forest in the Wide Bay-Burnett region. The \$2 billion project put forward by Forest Wind will comprise up to 226 turbines. Construction could start by the end of this year, pending results of talks on off-take contracts and financial close. Forest Wind is a joint venture between Siemens and Queensland's Clean Sight. Queensland currently has 5,500 megawatts of installed renewable energy capacity after more than \$5 billion has been invested in almost 2500MW of new renewable generation, creating almost 5,000 jobs.

Philippine's Ayala Corporation subsidiary AC Energy is set to sell \$1bn worth of coal assets, aiming to balance its renewable and thermal portfolios to support an expansion of 5 GW of geothermal solar and wind projects in Vietnam, Indonesia, and the Philippines by 2025. AC has invested in an 81MW North Luzon wind farm in Pagudpud and a 52MW Northwind Power wind farm in Bangui Bay, as well as the MonteSol, IslaSol and SacaSol solar projects. (ieefa)

Spain's Iberdrola is moving forward with a \$2.7 billion, 496MW wind farm off the French coast. The Saint-Brieuc project is ready for construction, says Iberdrola's managing director, who added that the wind farm would begin operations in 2023. Offshore construction is scheduled to begin with the installation of foundation piles in 2021, and to be completed in 2023 with turbines installation and the project being made fully operational.

Uzbekistan has a deal with Saudi Arabian developer ACWA Power worth potentially over \$1 billion for a wind farm with capacity of up to 1 GW. The wind deal is part of a clutch of agreements between Uzbekistan and ACWA Power, including a 25-year power purchase agreement, with a total investment value of \$1.2 bn for a 1500MW natural gas power plant. (ieefa)

Wind provided a record of 40.2 percent of Oklahoma's electricity statewide electricity generation in 2019, Oklahoma Power Alliance reports. Alliance data showed Oklahoma ranked second among US states for 2019 for the amount of energy its wind farms generated, and third for the amount of wind capacity installed. Alliance estimates more than \$20 billion have been invested in renewable projects within the state.



CIM Group has kicked off construction on the first phase of an over 2.7GW solar photovoltaic park in California's San Joaquin Valley. The project, named the Westlands Solar Park, will become one of the largest power plants of its kind, generating electricity to over 1.2 million homes when working at full capacity. It will span over 20,000 acres of the state's Fresno and King Counties. Power from the Westlands Solar Park will go to public and private utilities and other energy consumers, it was reported.

German utility RWE plans to build another 4 gigawatts of renewables by 2022, expanding the scope for its annual investments into wind and solar. RWE will invest \$1.5 to \$2 billion into renewables each year in the near term. In a recent update, RWE said it now has a 20-gigawatt development pipeline and 2.7 gigawatts under construction. In total, RWE will spend \$5 billion by 2022 growing its renewables portfolio, with 20 percent earmarked for Germany.

The Energy and Resources Institute has found that India's reservoirs have 18,000 sq km of area with the potential to generate 280 GW of solar power through floating solar photovoltaic plants. At present, ground-based installations form 93.1 percent of India's grid-connected solar PV sector, the report adds. The installation cost of utility scale solar PV in India has reduced by 84 percent between 2010 and 2018, making it the country with the lowest installation cost for utility scale solar PVs.

Basin Electric Power Cooperative, Bismarck, SD, to purchase electricity from a solar farm slated near Rapid City,

SD. The co-op announced the power purchase agreement with Geronimo Energy, developer of the Wild Springs Solar Project, which, with a capacity of 128 megawatts, would become the largest solar farm in South Dakota once built. The project is scheduled to start operating in 2022, according to Basin. Geronimo is also proposing a 200-Megawatt Harmony solar farm in Cass County.

Alliant Energy Corp. is moving forward with a 1,000 MW solar buildout that will continue through 2023 in Wisconsin. Alliant serves more than 965,000 electricity customers in Iowa and Wisconsin and meets a summer peak demand of 5,459 MW. Alliant's regulated utilities own 12 wind farms with 1,890 MW of capacity, and also serves 415,000 natural gas customers.



The global energy storage market quadrupled last year to 4 gigawatts of new installations and will surge to a 15-GW annual market in 2024, according to Wood Mackenzie. The market has seen a rash of major project announcements recently, where developers are increasingly pairing large-scale solar arrays with batteries. NextEra Energy is adding substantial storage capacity. Google's solar-plus-storage deal with NV Energy could blaze a trail for other companies looking to meet their real-time energy needs with renewables. (ieefa.org)



Queensland announces Gladstone as the host of a new renewable hydrogen production hub, that will see the construction of a multi-billion dollar H2 Hub Gladstone facility that will produce renewable hydrogen, as both a source of zero-emissions gas and for the use in the production of ammonia. The \$1.61 billion H2 Hub will be constructed through a staged process and could ultimately include electrolyser capacity of up to 3,000MW, producing renewable hydrogen and 5,000 tonnes of daily ammonia production.

People in the News

Lars Engstrom joins the Normet Group Board of Directors. Engstrom is currently chairman and a board member of several companies. He has previously served as president of Sandvik Mining & Rock Technology, CEO BE Group, CEO Munters Group and Divisional President at Atlas Copco AB. Engstrom brings a wealth of international industry experience to Normet from these leading companies and organizations.

Logan Soya, founder and CEO of Aquicore, Washington, DC, selected as a 2020 "CRE Tech Influencer of the Year" by Globe St. The list is comprised of accomplished technology leaders whose successes, innovations, and best practices have left an impact on the US commercial real estate industry over the year.

Russell Simpkins joins Microbial Discovery Group LLC, Franklin, WI, as account manager for the Wastewater Treatment industry. Simpkins will focus on servicing new MDG partners with the company's Biotifx platform, a complete solution that includes bioaugmentation products, step-by-step treatment programs, and in-field technical support. He brings over 30 years of sales experience at companies such as Ingredion Inc. and American Water, where he was responsible for specialty chemical sales for the pulp and paper sector.



Holly Krutka, currently vice president for coal generation and emissions technologies with Peabody, succeeds **Mark Northam** as executive director, to lead the University of

Wyoming's School of Energy Resources. Northam is retiring after nearly 13 years at the helm of SER as its founding director. In Krutka's role with Peabody, much of her focus was on carbon management strategies through application of carbon capture, use and storage. Additionally, she has worked to identify nontraditional coal-consumption opportunities. She has been a member of the National Coal Council since 2013 and serves on the executive committee and as chair of the Coal Policy Committee; is a judge on the NRG COSIA Carbon XPRIZE

competition; and speaks frequently as a carbon capture technical professional.

Barbara Womersley appointed to the board of directors of Liberty Gold Corp., Vancouver, BC. Ms. Womersley is a chartered professional in human resources and brings over 20 years of experience in a variety of industries with a focus on the mining industry, including previous senior roles at Barrick Gold Corp., Lundin Mining Corp, and Yukon Zinc Corp. Ms. Womersley heads a human resources consultancy, leading projects such as leadership coaching and advising, compensation system review and implementation, recruitment for senior roles, HR policy and project management plan development, and performance management system development and implementation.

Mark Snyder appointed to the technical advisory board of Enertopia Corporation, Kelowna, BC. Snyder has been active in the clean energy space for over 40 years with experience covering a wide range of activities across multiple clean energy industries. His expertise includes new tech, process development, management of feasibility studies, engineering & management of construction, and operation of projects. He will focus on the company's lithium project in Clayton Valley, NV and in the fields of off-grid & micro-grid storage systems.



Nick Hare appointed president at Hexagon's Mining division. Hare has been integral to the division's growth since joining in 2016. Hare was previously chief operating officer and chief financial officer for

the division. Hare succeeds **Josh Weiss**, who has been promoted to COO/CDO of Hexagon's Geosystems division and will continue to provide strategic guidance to the mining division as part of Hexagon's industry-focused strategy. In his previous roles as COO and CFO, Hare was involved in all aspects of the business, leading the company's strategy and operations, driving commercial activities, portfolios and shared services functions. He is experienced in progressive managerial finance and management consulting roles.

Barry Dahl appointed chief financial officer (CFO) at RNC Minerals, Toronto, CAN, and former CFO, **Tom Hollaar**, assumes the role of vice president, finance, and will continue to be a core member of the corporate finance team. Most recently, Dahl was the CFO of Excelsior Mining Corp. and spent five years as CFO of the Klondex Mines. Prior to that, he was CFO of Argonaut Gold. Dahl is a CPA with an MBA from New York Institute of Technology and an accounting/science degree from Brigham Young University.



Asa Weber appointed Global Stackcell product manager at Eriez Flotation, Delta, BC, and will oversee all sales, business development, marketing and technology

development related to the company's StackCell flotation business. Weber has held leadership positions at several companies in the minerals sector over a more than three decades-long career. He is expert on mechanical and column flotation equipment as well as flotation equipment design, flotation circuit configuration, and equipment optimization.

Eric Vendel named chief of the Division of Oil and Gas Resources Management for the Ohio Department of Natural Resources Columbus, OH, and will oversee ODNR's regulation of Ohio's oil and natural gas industry for the protection of the public and the environment while ensuring the state's abundant natural resources are managed and developed responsibly. He has served as the division's lead attorney since 2012 where he has drafted and reviewed oil and gas rules and regulations, chief's orders, contracts, and compliance agreements, as well as advising staff on enforcement, permitting, engineering, underground injection control, emergency response, and the orphan well program.

Gerbrand Van Heerden has departed Trevali Mining Corporation, Vancouver, BC, after serving as chief financial officer since June 2018 and CFO at Trevali's Rosh Pinah mine in Namibia. **Matthew Quinlan** appointed interim CFO after serving in a consulting capacity over the

last 5 months. Quinlan has 20 years of experience in finance, capital markets, and the global mining industry, serving most recently as CFO of Dominion Diamond Corporation and prior to that as Managing Director & Co-Head of CIBC's Global Mining Investment Banking group.

David Stein, CFA, MSc, has joined the board of directors of Eastmain Resources Inc., Toronto, ON, replacing **Claude Lemasson** who has stepped down from the company. Stein has over 20 years of experience, bridging the gap between the technical and financial sectors of natural resources. He is currently Founder, President and Director of Kuya Silver Corp. Prior to Kuya, Stein served as president, CEO/COO of Aberdeen International. He started his career at Cormark Securities as mining analyst, eventually serving as executive director of the company.

Ash Carter, former U.S. Secretary of Defense, nominated to the GE board. Carter also serves on the board of Delta Air Lines. Ash has expertise in international affairs, technology, security, and government, having led operational reforms at the Department of Defense. He brings perspective of customers in aerospace and government, directly onto the board. His experience includes assessing and navigating changing geopolitics, markets, and industries.



BC Tripathi, former chairman at GAIL (India) has joined the Essar Group as non-executive chairman of Essar Exploration and Production Ltd

Mauritius, and a board member of Essar Oil UK. He will drive the investment strategy and play a key role in providing strategic direction to EGFL.

Richardo De Armas appointed to the board of directors at the Nevada Copper Corp., Yerington, NV. DeArmas is an investment professional at Castllake, L.P. He has spent over a decade in the investment and corporate finance sector, occupying senior roles with De Jong Capital, Zaff Capital and Citigroup's investment banking division, and as a financial analyst at Procter & Gamble. The company also announces the

resignation of **Anthony Cina** from the board.



Greg Cook promoted to executive vice president and chief financial officer of Motion Industries, Inc., Birmingham, AL. Cook joined Motion Industries as senior vice president and

CFO in November 2016 and improved the effectiveness of the company's finance, accounting, tax, and treasury functions. He has also added responsibility for corporate strategy functions. In his expanded role, Cook will continue leading these current responsibilities, and will also take on oversight of Motion's Information Technologies function. He has over 29 years of experience in the manufacturing and distribution markets.



Craig McCabe, a Wesfarmers Resources veteran, appointed chief executive at Stanmore Coal to replace **Jon Romcke**, who had held the position as interim

CEO. Previously, McCabe was CEO at Wesfarmers with responsibility for the Curragh and Bengalla mining operations. He will focus on driving the company's performance improvement and the next stage of its expansion, plus operating performance and finalizing approvals for the development of Isaac Downs, the next phase of expansion.

George Willis joins the board of directors at Vulcan Materials Company,

Birmingham, AL. He will serve on the audit and safety, health and environmental affairs committees of the board. Willis is president, U.S. Operations of UPS and has demonstrated exceptional leadership in his over 35-year career with UPS, with extensive experience in operations and logistics in a complex global business environment. He will provide invaluable insight on matters critical to the Vulcan business.

Jessica McDonald steps down as chair and a member of the board of directors of Trevali board of directors. **Jill Gardiner**, a director and current chair of Trevali's Compensation and Human Resources committee, has been appointed the new chair. McDonald was instrumental in the progression of the company, particularly the leadership and direction she provided in management. Ms. Gardiner joined the board in July 2019 with a strong background in finance, capital markets and corporate governance. She also sits on the board of Capital Power Corporation.

Peter Mah, P.Eng. appointed chief operating officer (COO) at McEwen Mining Inc., Toronto, Can. Mah is a professional engineer with 30 years of global mining experience spanning gold, diamonds, and base metals. He has a record of building, transitioning and operating underground and open pit mines, most notably the Kencana underground mine in Indonesia, which produced over 400,000 ounces of gold per year, and the De Beers Victor open pit diamond mine in Ontario.

Mining People Magazine has You Covered

The Most Unique Blend of Editorial and News in the Industry...
Comparable to No Other! In-Print and On-Line

August

MINEXPO PRE-SHOW ISSUE

September

MINEXPO SHOW ISSUE

MINExpo SHOW ISSUES: These issues will include an Exhibitor's Index Section highlighting company profiles, booth number and contact information for MPM advertisers exhibiting. BONUS Distribution at MINExpo, in addition to regular mailed and digital circulation.

1/2-Price Advertising Available for Show Insert!

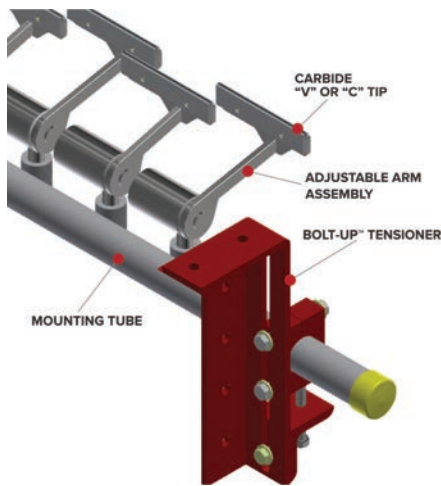
Contact a sales representative!

Lisa Roper 864/278-8227 lisa.ropер@charter.net



Product News

ESCO, Brooksville, FL, has launched two new products to regulate air pressure for air tools and air-hydraulic-powered pumps. The new Air Pressure Reducers are designed to assist in lengthening the life of tools and equipment, adhering to manufacturers' recommended operating air pressure and promoting safe and accurate use. The aluminum housing with antirust and non-corrosive parts is equipped with an internal filter that prevents debris and other particulates from contaminating and clogging the inner mechanism of an air motor. Call 800/352-9852.



ASGCO, Allentown, PA, has added a new line of Secondary Belt Cleaner products; the ASGCO BC-2 Conveyor Belt Cleaner that provides cleaning efficiency. Its pre-tensioned stainless steel torsion spring mechanism provides continuous pressure on each arm assembly and the bolt-on overlapping tungsten carbide blades are adjustable and easy to replace. Overlapping blades ensure 100 percent belt coverage. Blade can be replaced individually. Heavy duty zinc coated steel mounting tube, self-tensioning arm assembly and blades provide constant cleaning with corrosion and rust resistance. Call 800/344-4000.

Columbus McKinnon Corporation, Getzville, NY, offers a new ETA-3 Series Rail that provides versatility and improved ergonomics for light-duty applications, to its product portfolio. The ETA-3 rails can be used in a variety of configurations, including as tool rail for weld guns, light fixtures, weld curtains, spring balancers, and work benches, or as a side-by-side rail to carry additional equipment on a crane. Contact Lynn Bostrom at lynn.bostrom@magnetek.com.



Martin Engineering, Neponset, IL, introduces the Martin Impacting Railcar Opener (IRCO), a new high-speed, high-torque railcar opener engineered to quickly open and close even the most stubborn gravity discharge gates. Powered by a 1-1/2" pneumatic impact tool capable of delivering up to 10,000 ft/lbs (13,558 Nm) of torque. Features a mechanism that provides nearly 15" (38 cm) of height adjustment. By repositioning the axles, the tool can be set up to accommodate capstan heights of 7.23" – 22.22" (18.4 cm - 56.4 cm) or 10.23" – 25.22" (26 cm – 64 cm). The capstan extension can be quickly and easily aligned (level and square) with the gate's capstan, allowing the tool to apply maximum torque to the gate and reduce the chance of a misalignment that could cause stripping. Like all Martin products, the new railcar opener is covered by Martin Engineering's "Absolutely No Excuses" guarantee. Company offers a 14-day risk-free trial. Call 800/544-2947 for details.



Camfil APC, Jonesboro, AR, features the HemiPleat premium replacement filter cartridges that fit most dust collector brands and are guaranteed to last longer than standard filters, saving operators time and reducing maintenance costs. Filters use a pleating technology that exposes more filter media to the air stream to boost the performance of industrial dust collectors. HemiPleat media lowers the filter's pressure drop and facilitates a better release of dust during pulse cleaning, resulting in using less compressed air and lowering the energy demand of the fan motor. Contact Vince Brown at 870/910-7162.

bostrom@magnetek.com.

Flexco, Downers Grove, IL, introduces Flexco Elevate Belt Conveyor Intelligence, an innovative, real-time monitoring system that harnesses the power of predictive analytics so mining, aggregate, and cement operations can remotely gather critical insights that optimize belt conveyor productivity and heighten operational efficiencies. Flexco Elevate is a wireless platform that transfers data insights to an intuitive

cloud-based dashboard via edge technology, allowing remote monitoring of belt cleaners. Platform is designed to simplify and accelerate belt maintenance using its data-driven engine. Call Kelly Clancy at 630/971-6477.

Oliver Boots has incorporated new features and engineering advancement on its All Terrain 65-490 boots, that include 100 percent waterproof technology, full CORDURA vamp for abrasion and caustic

resistance, and Q-Flex non-metallic penetration protection insole. COOLstep and NANOLite keep the boots dry and comfortable for all-day wear. Weight has been reduced. User is protected from impact and abrasion with SAFETYcell, which comprises of toe bumper and CORDURA vamp and heel guard. A 30-day comfort guarantee allows customers who have been fitted in-store the option to return or exchange the boots. Contact Eleanor Sachs at 781/775-6039.

Descartes Labs, Santa Fe, NM, announces its Advanced Mineral Exploration Package is available. The package is a specialized data platform and modeling workbench for exploration geology and data science teams to access remote sensing and machine learning capabilities globally. Users can integrate in-house data with the platform, giving them access to advanced artificial intelligence capabilities. Call Peter McCormack at 949/872-6569.



American Eagle, West Des Moines, IA, has released its 30P-E Compressor, an electrically driven air compressor, driven by a 48V electric motor and controller in lieu of a traditional hydraulic system. Allows the compressor to be paired with work trucks that are built on an electric hybrid chassis platform. Compressor's small footprint and 225 pounds, makes it suitable to a hybrid work truck where higher air consumption is needed. Produces a maximum air output of 30 CFM and up to 150PSI of air pressure. Contact Troy Johnson at 515/224-7408.

E2S Warning Signals, Great Britain,

Dyno Nobel, Salt Lake City, UT, will soon release the EZshot EZDet (EZD) series, the newest electronic initiation system for surface blasting. Units consist of a green shock tube with a surface detonator attached to one end and a high-strength in-hole electronic detonator on the other. The surface detonator is set inside of a color-coded plastic EZ Connector block to facilitate easy connections to shock tube leads and can hold up to 6 shock tube leads. Easy-to-read, color-coded delay tags display the delay number and nominal firing time prominently to ensure ease-of-use. Can be used in combination with NONEL MS, NONEL EZTL and/or NONEL TD detonator for complex blast design requirements and minimize inventor of initiation system components. Call Mark Doman at 860/408-1847.



features a new range of integrated signaling assemblies, providing system designers and installers with pre-configured solutions. The new E2S range eliminates the cost of on-site assembly operations while guaranteeing that the connections and cabling between devices meet the hazardous area approval requirements and ensuring that all signals are fully tested and certified. Available in multiple configurations of up to seven devices. Can be assembled to give a solution for any environment. Call Nigel May at +44 (0) 1725 518321.

ASGCO Complete Conveyor Solutions, Allentown, PA, has unveiled two new products in its line of Safe-Guard safety conveyor products. Designed to secure the belt for safe repair, the BC6 (6 tons) and BC8 (8 tons) Safe-Grip Belt Clamps were created for maximum grip. Capable to handle more weight and work in any condition, they replace the existing BC5 and BC7 models. The BC6 is available for belts up to 72" wide and up to 1" thick. The BC8 has a lighter metal body and incorporates the use of reinforced bars, and available for belts up to 96" wide and up to 2¼" thick. Capable of handling heavy-duty wide conveyor belts. Call 800/344-4000.

Metso Corporation, Helsinki, Finland,

is extending the NW Rapid series of transportable wheel-mounted crushing plants with a range developed specially for road transportation in North America. First models of the range are the NW120 Rapid portable jaw crushing unit, and NW1213 Rapid portable impact crushing unit, which have been re-designed to permit their transportation in most states of North America. NW Rapid can be moved from one site to another using standard prime movers. Quick set-up and a production capacity of up to 500 metric tons per hour. Contact Jarno Pohja at +358 400 375 840.

Appleton Mfg., Neenah, WI, unveils a new RollMover HD with a smart lithium battery, comprehensive on-board analytics, and an improved ergonomic design. Moves heavy rollable loads safely and easily. Designed to easily and quickly move paper rolls, wire reels, vehicle chassis, and other types of products in a variety of industries. The Lithium Battery Pack charges fast, holds a charger longer, and offers more charging cycles over its life. The battery features in-depth, on-board analytics that offer data on battery state, performance, and maintenance cycle for improved use. Visit www.appletonmfg.com/products/rollmover-hd.

continue



Caterpillar introduces the Cat 6030 Hydraulic Mining Shovel, featuring Cat C27 engines and is available in configurations to meet the strictest diesel emissions standards, such as those in North America and Europe. The 6030 retains its 30-tonne payload capability. It also features product link Elite, which enables data communications for comprehensive machine health monitoring. The first hydraulic shovel to display the new Cat Modern Hex graphics. Contact Mark Sprouls at 520/744-5061.



Epiroc, West Des Moines, IA, introduces the DM30 II SP (Single Pass) rotary blasthole drill for quarrying and small mining operations. The crawler-mounted, hydraulic tophead-drive rig offers faster hole-to-hole drilling and a lower cost per ton through single pass capability. It can achieve a clean hole depth of 11 meters for single-pass applications. A small footprint makes it easy to maneuver on tight benches and simple to transport within the pit and over the road pits. Its design and layout grants quick and easy access to all major service points, simplifying maintenance. Call Lauren Manecke at 515/273-2494.

Donaldson Company, Inc., Leuven, Belgium, has expanded its Donaldson iCue connected filtration service to Europe. Features include reduced downtime for dust collection equipment and production lines; lower maintenance costs for labor and parts, including longer filter replacement intervals; and better management of dust collector tasks and compliance reporting data. Call 833/898-5996.



Force Control Industries, Fairfield, OH, introduces the MagnaShear marine duty motor brake, a totally enclosed, sealed, oil shear brake that delivers maintenance-free, no-adjustment cycles. Employs oil shear technology, providing



RCT, Kewdale, WA, features the ControlMaster, where equipment operators can manage mining plant development by multiple manufacturers from the same operating platform, the Automation Center (AC). AC enables operators to manage multiple machines at once and in real-time while located either on the surface of an underground mine or in designated areas within the mine. RCT has implemented its Multi-Fleet Select on active mine sites, meaning operators can manage various machine types such as underground LHD loaders, water trucks and rockbreakers from the same secure station. Contact Nicholas Brant at +61 8 6272 4157.

longer service life in demanding applications like the frequent start/stop cycles experienced with barge spotting. The totally enclosed MagnaShear brakes are impervious to moisture, dirt and dust in coal, sand, and grain loading facilities. A patented fluid recirculation system helps to dissipate heat, and continually lubricate all components of the brake, elongating service life. Call 513/868-0900.



ALLU Group, Finland, has launched a new Allu Crusher, designed to meet the requirements of the demolition, recycling and quarrying industries. The new crusher series handles excavators in the 10 to 33-ton range. Features include reversible crushing that reduces potential for jamming, blockages, or obstruction with rebar are avoided; feed plate design built in to the jaw that ensures the feeding function in a fully loaded chamber delivers high rates of production; simple mechanical pin adjustment for output size regulation; and crusher that 'opens like a clam,' designed for easy and quick replacement of wear parts. Contact Marjut Lindroos at +358 3 882 140.

Mindrill Systems & Solutions, West Bengal, India, features the MD690 Pneumatic Drifter, a versatile yet low-cost drill suitable for both surface and underground applications. Can be used with a variety of shank adapters, and designed for long hole drilling, bench drilling, and drifting with hole diameters of 51-89 mm. Easily mountable on a variety of drill rigs. Has both water and air flushing options and can be converted from one to another based on the operator's needs. Enables rotation in either direction. Call +91 98303 92522.

Berthold Technologies offers products that manage interference radiation and provide customers with a stable and reliable measurement that ensures a continuous process, avoids unscheduled shutdowns, and generates a benefit. The features XIP (X-Ray Interference Protection) or RID (Radiation Interference Discrimination) help plant operators get "RID" of problems caused by interference radiation. Visit www.berthold.com/rid.

PRODUCT LITERATURE/VIDEOS

Global Mining Equipment Market 2020 encompasses a wide scope analysis of various economic factors affecting the industry performance on a regional and global level. The report offers a detailed outline of the industry chain components including suppliers, customers, manufacturers, and distributors. Major companies profiled in the report include Atlas Copco, AB Volvo, Caterpillar, Zhengzhou Coal Mining Machinery, Komatsu, Joy Global, Hitachi Construction, Kawasaki, Sandvik, FLSmidth, and others. Visit www.marketresearchstore.com.

HARDSTEEL, INC.
Manufacturers of Chromium-Carbide Overlay Plate

Abrasion never quits. Neither do we. Solutions. Service. Satisfaction.



205.343.9100
overlay@hardsteel.net
www.hardsteel.com

Contact a Sales representative for information on **Expanded Coverage** in the mining and aggregates industry!

Reserve Your Space in this Section!
 864/278-8227



RICHWOOD
 Proven Solutions. Expert Advice.

Reliable Belt Cleaning

When all other belt cleaners look alike, one stands out- rely on Richwood belt cleaning systems to get the job done. Learn more, visit richwood.com.

www.richwood.com 1-800-237-6951

COAL PREPARATION

CONTRACTORS

Serving the Energy Industry's Needs for Design-Build Process and Material Handling Systems



FARNHAM & PFILE ENGINEERING & CONSTRUCTION

Please visit our website at www.farnham-pfile.com



Cowin & Company, Inc.

- Raise Boring • Shafts • Slopes
- Underground Construction



205.945.1300
www.cowin-co.com

A Leader in Mining Construction Since 1924

CONVEYOR ACCESSORIES

CONVEYORS



RICHWOOD
 Proven Solutions. Expert Advice.

Eliminate Belt Misalignment!
 ON-Track® reliably directs and controls belt tracking. Learn how ON-Track® is increasing safety and productivity- visit richwood.com.

www.richwood.com 1-800-237-6951



WEST RIVER
 CONVEYORS + MACHINERY CO.

Quality Conveyor Systems & Components

WESTRIVERCONVEYORS.COM • 800 332.2781

CUSTOM VENTILATION SYSTEMS

Underground Axial Fans, Centrifugal Fans, and Portable Mine Fans

- Custom Designs
- Turn Key Installation
- 24/7 Service & Repair
- Complete Parts Inventory



276.530.7311

paulsfans.com

Founded by Paul Elswick in 1958, we manufacture, install, service, and repair large and complex ventilation systems. Paul's Fan Company serves a variety of industries ranging from mining to large commercial buildings, factories, and refineries.

QUALITY


PEOPLE ▶ PRODUCTS ▶ SERVICE

Since 1954

Your HDPE Specialists

- Fabrication
- Fusion

- Pumps
- Pipe



1.800.353.3747

www.leesupply.com

IMPACT SADDLES

RAISE BORING



Proven Solutions. Expert Advice.

Protect and Contain Load Zones

Trust the Original.
Impact Saddles® have been protecting busy load zones for over 20 years. To learn more, visit richwood.com.



www.richwood.com

[1-800-237-6951](tel:1-800-237-6951)

SAMPLING SYSTEMS

Division of Cowin & Company, Inc.

www.raisebor.com



RAISEBOR



The most powerful raiseboring machine in the United States!

Ph: 505.334.8700

Birmingham, AL

Contact: Mick Hardwick

mhardwick@raisebor.com




LEASE UNITS AVAILABLE

PRECISION SAMPLERS, INC.

- AUGER SAMPLING SYSTEMS
- CROSS BELT SAMPLING SYSTEMS
- FALLING STREAM SAMPLING SYSTEMS
- MULTI-STAGE PROCESSING
- TURNKEY INSTALLATION
- INSPECTION - SERVICE



The Source for ALL Your Mechanical Sampling System Requirements

Phone: 304.744.5534 Fax: 304.744.3113

www.precisionsamplers.com



*Uncompromising Industrial,
Commercial & Mining
Products & Services*

Safely Exceeding Customer's Expectation...Every Time!

Ventilation Systems • Elevators • Hoisting Systems • Skips, Sheaves & Gages
Electrical Controls • Material Handling & Processing
Maintenance & Repair • General Construction





Ph: 276-228-3167
Email:
Sales@CoalfieldServices.com
coalfieldservices.com





Keep your
longwall
moving.

Strata AFS

Rock Consolidation
& Void Fill



STRATA
WORLDWIDE

p 800-691-6601
e info@strataworldwide.com
www.strataworldwide.com

PROCESSING EQUIPMENT










CTI-X7® CERAMIC PROCESS EQUIPMENT

(276) 964-6724 WWW.CERAMICTECH.COM FIND US ON 

By employing territory sales engineers, we strive to support your onsite managers by advising the best path forward into a progressive pattern of improved maintenance. We strive for timely quotes and deliveries of CTI-X7(r) parts and fabrication. Averaging 4-6 weeks shipping and we can also expedite at Managers request. We coordinate deliveries with onsite contractors and work closely with them to assure schedules and scope of work meets with customer approval.

Call: 800-437-1142 Email: info@ceramictech.com
CTI-X7® Performance Standard
www.vimeopro.com/user22257983/cti-x7

TIRES

TOUGH TESTED PROVEN

Solving Your Toughest Tire Problems

**SETCO Offers Complete Tire Assembly to
HAUL THE HEAVIEST LOADS**



SETCO's newest design, the S-Mine tire, has improved shape and tread design which will provide the best traction as well as longevity and productivity. Air holes are molded into the sidewalls for a much softer ride.

Authorized Distributor:
R.M. Wilson Co., Inc.
Wheeling, WV (800) 624-5460
Beckley, WV (800) 232-5539
Price, UT (435) 637-6950

www.setcosolidtire.com

Phone (580) 286-6531
Toll Free (800) 634-2381

INDUSTRIAL AND HYDRAULIC HOSE



Service Is More Than A Promise

- MSHA APPROVED • INDUSTRIAL SUCTION/DISCHARGE
- CABLE GUARD • GENERAL PURPOSE AIR/WATER • HYDRAULICS
- CRIMPING CAPABILITIES UP TO 6" • 8,000 SQ/FT ASSEMBLY SHOP

304-736-8333 • 800-334-5226

Jabosupply.com



- Huntington, WV
- Parkersburg, WV,
- Beckley, WV
- Norton, VA
- Morganfield, KY



APRIL 2020 Advertising Index

DISPLAY ADVERTISING

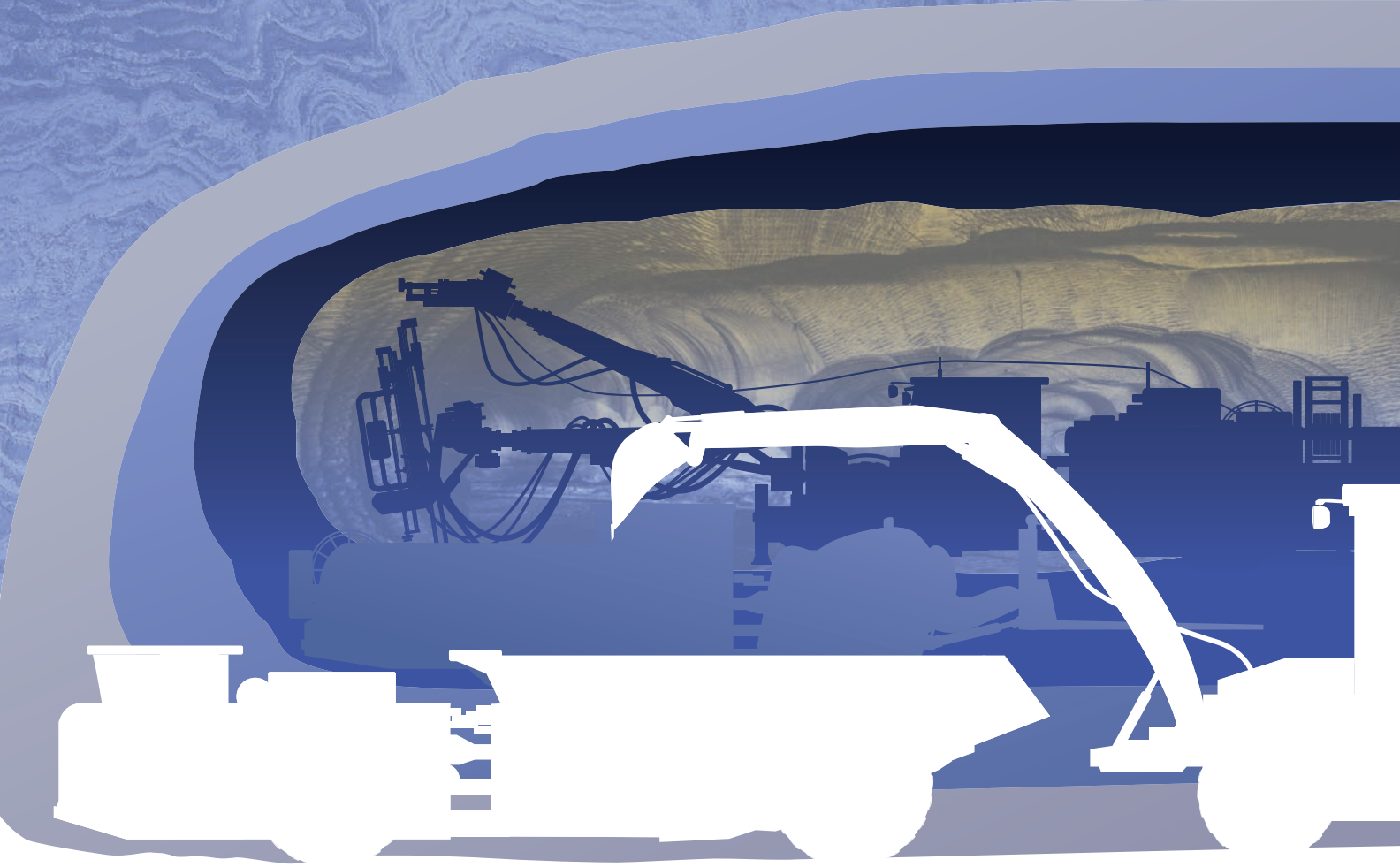
Jennmar Corp.....	11
www.jennmar.com	
Lee Supply Co., Inc.	8-9
www.leesupply.com	
MINExpo International.....	35
www.minexpo.com	
Pauls Fans.....	3
www.paulsfans.com	
RM Wilson Co Inc.....	36-BC
www.rmwilson.com	
RACO Intl.	15
www.racointernational.com	
Richwood.....	7
www.richwood.com	
Setco	5
www.setcosolidtire.com	
United Central Industrial Supply Co.	2
www.unitedcentral.net	

PROFESSIONAL DIRECTORY / CLASSIFIED

Ceramic Technology.....	33
www.ceramictech.com	
Coalfield Services.....	33
www.coalfieldservices.com	
Cowin & Co., Inc.....	31
www.cowin-co.com	
Farnham & Pfile Eng. & Construction.....	31
www.farnham-pfile.com	
HardSteel, Inc.....	31
www.hardsteel.com	
Jabo Supply Corporation.....	34
www.jabosupply.com	
Lee Supply Co., Inc.	32
www.leesupply.com	
Pauls Fans.....	32
www.paulsfans.com	
Precision Samplers.....	32
www.precisionsamplers.com	

Raisebor	32
www.raisebor.com	
Richwood.....	31, 32
www.richwood.com	
Setco	33
www.setcosolidtire.com	
Strata Worldwide	33
www.strataworldwide.com	
West River Conveyors.....	31
www.westriverconveyors.com	

Call your sales representative
for information on advertising!
Lisa Roper (864) 278-8227

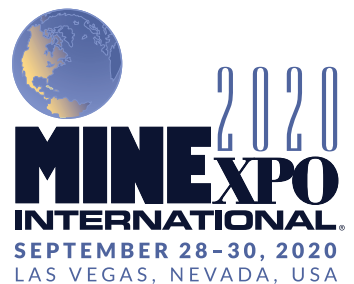


EXPLORE EVERY LEVEL OF MINING

BRING YOUR CHALLENGES. LEAVE WITH SOLUTIONS.

It's more important than ever to be competitive—and there's no better way to keep your edge than by attending **MINExpo INTERNATIONAL® 2020**, the largest mining event in the world. You'll see the latest equipment, learn about new processes and best practices and explore the next generation of advanced technologies and services. Whether you're looking to optimize existing equipment and systems, improve safety, lower operating costs, increase productivity or advance environmental goals, you'll get exactly what you need to stay ahead.

Visit www.MINExpo.com to learn more and register.



SPONSORED BY



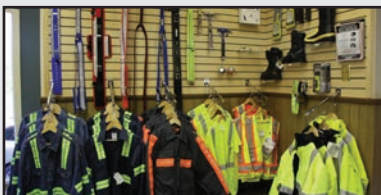
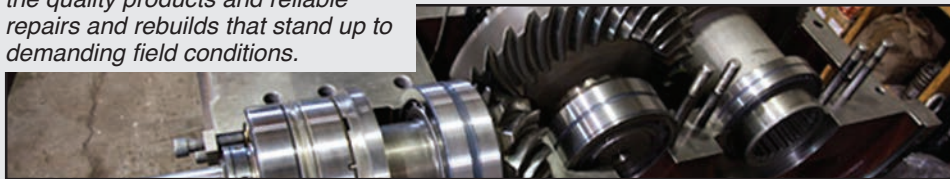
ENGINEERED PRODUCTS FOR THE MINING INDUSTRY

YOUR choice supplier of premier longwall mining equipment and parts including conveyor chains, gear units, solid tire and wheel assemblies, maintenance parts and accessories, safety equipment, hardhats, belts, cable handling chains and power tools.



Rebuilds and Repair

Rebuilds and repairs to mining equipment such as chains, belt conveyors, gearboxes and other mission-critical units. No matter the mining application, *rm wilson* provides the quality products and reliable repairs and rebuilds that stand up to demanding field conditions.



Safety Products Made Simple

Online purchases of safety equipment featuring hats, lights, belts, and clothing. *rm wilson* is also developing quick-kits to outfit one miner, or a whole crew.

rm wilson co.

High-Quality Products from the Most
Reliable Manufacturers in the Industry

BETEK BERGAU
Mining Bits.

CSE

SRLD, Methane Monitors and Accessories.

DRAGER INC.

Rescuer Systems, PPE, Gas Detection.

FLEXCO

Conveyor Belt Fastener Systems,
Belt Maintenance Tools.

KENNAMETAL, INC.

Mining Bits, Bit Pullers, Augers, Drill Rods.

KRUMMENAUER

Cylindrical & Globoid Shearer Drums
Pick Block Systems, EB Water Spray.

KWS

Lifting Chains, Slings and Hooks.

LONGWALL PANLINE ROOF BOLTERS

MANSIGN MINING EQUIPMENT CO.

Cable Handling Chains Hydraulic Hand Power
Tools.

MILLER EQUIPMENT

Confined Space & Fall Protection Equipment.

MUTLIGEAR

Industrial Drive Solutions.

RED DOG SERVICES

Compressed Air Fire Suppression.

RINGFEDER

Tschan & T&Z Couplings,

Keyless Shaft/HUB Connections.

SETCO TIRES

Solid Tire & Rim Replacement Tires.

SHUMAR

Complete Longwall System Rebuilds, Crawler

Mounted Tailpieces, AFC Panline Bolters.

SVENDBORG BRAKES

Controlled Braking Safety Systems.

THIELE

Longwall Chains and Accessories.

VOITH TURBO

Sales, Service, and OEM.

SPECIALTY ITEMS:

Longwall Chain & Flight Bar Assembly, Belt
Scrapers & Replacement Blades, Svendborg
Services, Hydraulic Brake Repair, On-Site
Services, Cable Handler Hose/Cable Assembly.

our mission...

Know our customer's needs.
Support them with superior high-quality
products from reliable manufacturers!

www.rmwilson.com

RM Wilson Mine Productivity Systems and Equipment

Wheeling, WV: 800-624-5460 Price, Utah: 435-637-6950 Beckley, WV: 800-232-5539 Lebanon, VA: 800-232-5539 Benton, IL: 800-624-5460